AD-A070 588 NATIONAL DEFENSE UNIV WASHINGTON D C RESEARCH DIRECTORATE F/G 15/5
DEFENSE TRANSPORTATION ORGANIZATION: STRATEGIC MOBILITY IN CHAN--ETC(U)
MAY 79 M E DANIEL

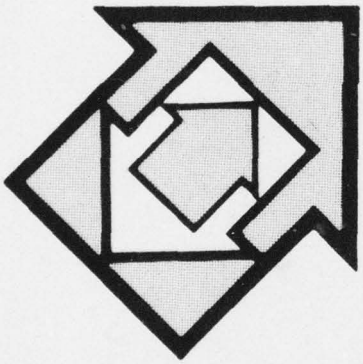
UNCLASSIFIED NATL SEC AFFAIRS MONO-79- NL

1 OF 2
AD
A070588

NATIONAL SECURITY AFFAIRS
MONOGRAPH 79-3
MAY 1979

LEVEL II

"without a responsive transportation system...we are without strategic mobility"



Defense Transportation Organization

Strategic Mobility in Changing Times

NATIONAL DEFENSE UNIVERSITY
WASHINGTON, DC 20319

(12) 118 p.

(14) NATL SEC AFFAIRS MONO-79-3

(6)

DEFENSE TRANSPORTATION ORGANIZATION: STRATEGIC MOBILITY IN CHANGING TIMES

(10) by
LTC Marshall E. Daniel, Jr., USAF
USAF Research Associate
Senior Research Fellow
Research Directorate

National Security Affairs Monograph Series 79-3

(11) May 1979

NATIONAL DEFENSE UNIVERSITY
RESEARCH DIRECTORATE
WASHINGTON, DC 20319

THE NATIONAL SECURITY AFFAIRS MONOGRAPH SERIES

This monograph is part of the National Security Affairs Monograph Series, which is published by the Research Directorate of the National Defense University. Papers in this series are prepared by the faculty, research fellows, students, and associates of the University and its component institutions, the Industrial College of the Armed Forces and The National War College. See the back page for a list of previously published monographs.

The purpose of this series is to disseminate among influential members of the national security policymaking community the results of research studies in selected areas of national strategy formulation and management of national security resources.

DISCLAIMER

Opinions, conclusions, and recommendations expressed or implied within are solely those of the author, and do not necessarily represent the views of the National Defense University, the Department of Defense, or any other Government agency.

DISTRIBUTION STATEMENT

CLEARED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock No. 008–020–00780–3

TABLE OF CONTENTS

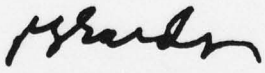
Partial contents;

FOREWORD

Strategic mobility is crucial to our capability to provide a credible conventional deterrent to infringements on our worldwide interests. It is the key to a major element of our defense policy—the firm commitment to timely deployment of combat forces and supporting equipment to Europe to counter a Warsaw Pact threat against the North Atlantic Treaty Organization. The inability of planners to count on clear-cut and unambiguous indications of Warsaw Pact preparations for attack compound the already serious problems of resupply and reinforcement in the NATO arena.

Lieutenant Colonel Daniel argues in his discussion of our defense transportation system that current capabilities and organizations may not be sufficient to meet likely strategic deployment requirements for either long or short war scenarios. Future conflicts may well involve an increase in the tempo of warfare, with resulting increases in the consumption of war-fighting materials, placing even greater demands on the transportation resources that make up the strategic mobility capability.

After analyzing the evolution of the defense transportation system to its present form, Lieutenant Colonel Daniel offers some thoughtful recommendations for organizational changes to improve the system's responsiveness in the face of increasing demands.



R. G. GARD, JR.
Lieutenant General, USA
President

ABOUT THE AUTHOR

LTC Marshall E. Daniel, Jr., wrote this monograph while assigned as a Senior Research Fellow and USAF Research Associate to the National Defense University during Academic Year 1977-78. A 1974 graduate of the US Air Force Command and Staff College, LTC Daniel is currently a student at the Industrial College of the Armed Forces. He holds a bachelor's degree in political science from the University of North Carolina and a master's in public administration from Auburn University. His recent assignments include service as Commander, Detachment 3, Military Airlift Command, Hellinikon Airbase, Greece; and as Operations Staff Officer, Headquarters Military Airlift Command, Scott Air Force Base, Illinois.

CHAPTER I
INTRODUCTION

To insure that NATO will not be overwhelmed within the first few weeks of a short warning war, the ability to reinforce with air and ground units at a very rapid rate is critical. Our strategy rests on that approach.

Lt. Gen. W. I. Creech, USAF
Statement to the House Committee
on Appropriations, March 1978

Current US security policy is predicated, in great part, on demands arising from the American commitment to the North Atlantic Treaty Organization (NATO), and the strategy of flexible response that supports that commitment. The strategic concept of flexible response places great emphasis on the ability of the United States to rapidly deploy combat forces, equipment, and supplies to Europe to counter an attack by Warsaw Pact forces. The degree of required responsiveness of strategic mobility forces is dependent on interrelated factors such as the nature of the threat or developing conflict, the capabilities of the enemy, and the nature of the forces to be lifted.

Analyses of recent conflicts, such as the 1973 Arab-Israeli encounter, suggest that the nature of future wars may differ considerably from that of past conflicts. These wars may exhibit a significant increase in the magnitude of violence, resulting in increased attrition of both personnel and equipment, and in vastly increased consumption of essentials such as POL (petroleum, oil, and lubricants), ammunition, and other expendable supplies.[1] This increase in the tempo of warfare will place uncommon demands on the transportation resources that constitute US strategic mobility capability.

Increased mobility requirements are also evident consequent to reappraisals of Warsaw Pact capabilities and intentions. Whereas past assumptions regarding Pact capabilities for aggression resulted in a relatively long warning time for the Western Alliance, recent analyses of Pact military posture tend to indicate otherwise. Some analysts, in fact, measure Pact capability to launch an attack as being as little as 2-3 days.[2] A review of Soviet

military writings also tends to support scenarios that depict less warning.[3] If less warning is, in fact, the case, the strategic mobility problems faced by Western transportation planners are greatly exacerbated, and the solutions to these problems become even more crucial.

The stringency of projected mission requirements, coupled with increasingly constrained defense budgets, dictate that an optimally efficient and responsive strategic mobility capability be developed and maintained at the minimum cost. The nature of the Defense Transportation System (DTS), not an organizational entity, but rather an aggregate of diverse capabilities, organizations, functions, and resources, sets the stage for the manner in which problems relating to the system must be approached. Solutions should address enhancement of overall transportation capability, eliminating parochial interests associated with a particular mode.

As will be shown, organizational changes within the Defense Transportation System closely paralleled mission demands imposed upon the system. Prior to World War II each service was almost completely independent in the area of logistical support and transportation capability was almost totally organic. However, with the partial unification and interdependence of the military services occasioned by the passage of the National Security Act of 1947, the military services came to depend on one another for "common-user" facilities and services. Hence, the organization of the transportation system reflected these changes in mission needs.

For more than 20 years, independent commissions, congressional committees, defense study panels, and similar groups have criticized the Defense Transportation System for its lack of central direction, its duplicated and overlapping functions and responsibilities, and its economically wasteful operating policies and procedures. The consensus of these study groups has been that increased integration of defense transportation capabilities and resources would result in increased responsiveness and productivity during crisis or contingency operations, and lower costs and increased efficiency during peacetime. It is upon this assumption that this study is based.

The study will review the historical development of the primary elements of the Defense Transportation System, concentrating on the evolutionary development of the Transportation Operating Agencies (TOA's). The missions, functions, and organizational relationship of the TOA's will be discussed, as will major capabilities, system limitations, and mobility enhancements currently applicable to defense transportation. Past and present efforts to improve strategic mobility capabilities through organizational initiatives will be discussed, and previous studies evaluating the efficiency of the transportation system will be overviewed. Finally, conclusions and observations arising from the study will be presented, as well as recommendations for appropriate organizational changes that may be required to enhance the strategic mobility capability of the Defense Transportation System.

ENDNOTES

1. An excellent presentation of this view of future warfare is given by General James H. Polk, US Army, Retired, former Commander in Chief, US Army, Europe, in "The New Short War Strategy," *Strategic Review* 3 (Summer 1975): 53. See also John H. Morse, "Questionable NATO Assumptions," *Strategic Review* 5 (Winter 1977): 23.

2. For a comprehensive discussion of assumptions regarding attack timing, see James Blaker and Andrew Hamilton, *Assessing the NATO/Warsaw Pact Military Balance* (Washington, DC: Government Printing Office, 1977), p. 20.

3. See for example, General-Lieutenant I. G. Zav'yalov, "Novoye oruzhiye i voyennoye iskusstvo" [The new weapon and military art] *Krasnaya zvezda* [Red Star], Moscow, 30 October 1970, pp. 2-3. Cited in *Selected Soviet Military Writings, 1970-1975*, translated and published under the auspices of the United States Air Force (Washington, DC: Government Printing Office, 1976); and A. A. Sidorenko, *The Offensive (A Soviet View)*, translated and published under the auspices of the United States Air Force (Washington, DC: Government Printing Office, 1976).

CHAPTER II
DEFENSE TRANSPORTATION BY SEA

SEALIFT DEVELOPMENT

The importance of ocean transport to the security of the United States was recognized very early by national leaders; consequently, among the initial acts passed by the First Congress in 1778 were measures to protect and develop the United States Merchant Marine.[1] Every war in which the United States has been involved has required heavy reliance on the Nation's merchant fleet.

The first four decades of the 19th century have been called the most glorious in American maritime history. During this period over 90 percent of the Nation's foreign trade was carried in US ships.[2] During the 1850's and 1860's the percentage fell, but the famed Clipper Fleet of the United States still carried between 66 and 73 percent of all US overseas commerce. But America's pride in her sailing fleet caused her to seriously lag behind in the development of the steamship which, by 1838, had already begun regular service between Europe and North America.[3] This lack of foresight resulted in a steady decline in the participation of the US merchant fleet in foreign trade until, by 1910, barely 10 percent of our foreign commerce was being carried in American-owned bottoms.[4]

World War I Years

By the beginning of World War I the American merchant fleet was virtually nonexistent—American waterborne commerce suffered both from a severe lack of US ships and from the rapidly escalating costs of ocean freight. As a result of this decline in the US fleet, the Government was forced into a crash program of shipbuilding at the beginning of World War I, resulting in the establishment, in 1916, of the Emergency Fleet Corporation and the War Shipping Board. These agencies accelerated the buildup of both the Army and Navy fleets of ships, letting contracts for more than 3,200 ships in the period between 1916 and 1919. The success of this last-minute effort was limited, as the majority of the new ships were not delivered until after the war had ended.[5]

The start of World War I found not only the Nation's shipbuilding programs to be deficient, but also the organization that was intended to manage the Nation's transportation assets. As a result of inadequacies in established transportation organizations, rapid, emergency changes in existing organizational relationships were made in the Navy and the Naval Auxiliaries. These changes established the Cruiser and Transport Force (CTF) and the Naval Overseas Transportation Service (NOTS).[6] The need to improvise defense transportation organizations to meet wartime needs would be repeated in future emergency situations.

World War II

Before World War II, the Nation once again faced an impending crisis with inadequate resources available to deploy and sustain a fighting force. The large fleet that had been belatedly built for use in World War I had, through neglect and oversight, been allowed to degenerate to the point that, at the beginning of World War II, virtually the entire merchant fleet was facing block obsolescence.[7] Congress, in response to the exigencies of the depression economy, and in an effort to overcome the glaring deficiencies in US sealift capability, enacted the Merchant Marine Act of 1936. The act established a five-member United States Maritime Commission which was chartered to develop a national program to promote the merchant marine. The commission developed a plan to build, over a 10-year period, 500 new merchant ships. This program was hardly underway when World War II began.[8]

The United States entered World War II with both the Army and the Navy retaining their individual ocean shipping capability. This capability had been in existence since the period of the Spanish-American War, when, in 1899, the Navy created the Collier Services and the Army established the Army Transport Service as a part of the Quartermaster Corps.[9] Throughout World War II, the two services maintained their separate shipping capabilities. In fact, there were four separate organizations that operated ocean shipping during the war in support of the military effort: Army Transportation Service, Naval Transportation Service, War Shipping Administration, and the Fleet Service Forces.[10] An effort was made in 1942 to combine the Army and Navy transport fleets, with

the Navy proposing to take over the Army operation.[11] This effort failed, however, because the Navy was unable to provide trained crews to man the Army ships.[12]

Postwar efforts to realign transportation responsibilities were a part of the broader question of service unification. The Army made a strong bid to retain operation of their own troop and cargo shipping, and, at one time, even proposed organizing a single separate service to provide for all of the transportation needs of the three departments.[13] The Joint Chiefs of Staff (JCS), however, recommended to the Secretary of Defense that responsibility for sea transportation be vested in the Navy, and on 5 January 1949, Secretary Forrestal approved the JCS recommendation and ordered JCS to study the procedures by which the responsibility for operating sea transport for the armed services could be transferred to the Navy.[14] On 2 August 1949, the Military Sea Transportation Services (MSTS) was established, combining ocean transport assets of the Naval Transportation Service and the Army Transportation Service. Transfer of Army sealift assets to the Navy was phased over an extended period into the latter part of 1950.

While the reorganization efforts associated with the birth of MSTS were in progress in military transportation circles, similar activity was being conducted in the civil sector. The Maritime Commission, which had been established by the Merchant Marine Act of 1936, was abolished by the President's Reorganization Plan No. 21 on 13 March 1950, and was replaced by two agencies: the Federal Maritime Board, which was responsible for the regulation and administration of the subsidy programs; and the Maritime Administration (MARAD), which was charged with the responsibility for administering maritime promotional programs.[15] This reorganization within the civil sector adversely affected the US response to the outbreak of the Korean war, since, in June 1950, when the war began, the primary civil maritime agencies were but 3 months old, and were ill prepared to initiate effective actions.

The Korean Conflict

The eruption of hostilities in Korea found defense transportation capabilities, once again, inadequate to meet effectively wartime transport needs. Three factors contributed to this

condition. First, the Maritime Administration was in its infancy, and was operating under temporary leadership, lacking even the basic authority to requisition ships or enter into agreements by which requisite vessels could be chartered. Second, the aging US fleet was nearing obsolescence, and no comprehensive shipbuilding program was in sight to replace outmoded vessels. Third, the agency that had been responsible for the majority of the logistical planning conducted prior to 1950, the Security Resources Board, had oriented most of its wartime planning toward long-range, all-out war, such as had been experienced in World War II. Planning for more limited, localized conflicts was virtually nonexistent.

The only organization that possessed both the capability and the authority that was required to meet the emergency shipping needs of the early days of the Korean war was the Military Sea Transportation Service, which was also experiencing growing pains associated with its early operations. Augmenting a nucleus fleet of 174 ships, MSTS acquired over 400 chartered and government-owned reserve ships, and with excellent support from private ship operators, began the movement of war supplies and personnel to the combat zone.[16] This initial effort on the part of the newly chartered MSTS clearly demonstrated its capability for innovative action and dedicated service. It did not, however, alter the fact that, as a nation, we had not been adequately prepared to mount a coordinated civil-military transportation system in support of national defense requirements.

There was a rapid response to the shortcomings of management of civil maritime assets. The Defense Production Act of 1950 was enacted, which resulted in the creation of the National Shipping Authority (NSA), a subordinate organization of the MARAD. NSA was provided the authority necessary to initiate general agency agreements, and it quickly assumed the functions of a wartime shipping contract agency, thereby relieving MSTS of much of the pressure it had faced initially.[17]

After this poor beginning, sealift requirements of the Korean war were met in a convincing manner, with MSTS maintaining a flow of military supplies to the Far East of over 30,000 tons per day.[18] This task was accomplished by a MSTS-controlled fleet that, by 1 April 1953, had grown to 531 vessels, 111 of which had been obtained through NSA general agency contracts.[19] The American

flag cargo fleet, which in June 1950 consisted of 638 ships, had by December 1951, swelled to 1,193 vessels, contributing a capability of over 1,000,000 tons per month.[20]

The end of hostilities in Korea signaled immediate action to reduce the size of the Nation's ocean transportation fleet. This fleet, so essential in war, was excess to then extant peacetime needs. The MSTS-controlled fleet experienced a rapid reduction in size, dropping to 371 vessels in March 1954, and down to 135 by 1 January 1965.[21] The size of the American merchant marine also underwent a steady reduction, and by 1 July 1965 consisted of only 965 ships.

From a military viewpoint, there were significant deficiencies in the makeup of this 965-ship commercial fleet. None of the ships in the fleet were capable of operating "over the beach" or into unimproved ports. None of the ships had deck space to accommodate critically needed landing craft, and only one, a converted World War II C-4, could handle roll-on/roll-off cargo. On the other hand, the newer ships in the fleet (those manufactured after 1946) had large hatchways and were capable of handling large military equipment and many of them had booms that were inadequate to lift some tanks and other extremely heavy loads.[22]

The Vietnam Period

The merchant marine responded extremely well to the initial call for augmentation for Vietnam requirements. By coincidence, at the time of President Johnson's decision to intervene in Vietnam in force, about 100 ships of the merchant marine were idle on the Atlantic and gulf coasts due to labor strikes. The maritime unions agreed to man essential ships with the provision that they would carry only military cargo. Even with this excellent response from the commercial maritime sector, it very quickly became apparent that it would be necessary to withdraw "mothballed" vessels from the National Defense Reserve Fleet (NDRF) maintained by the Maritime Administration. At the peak of the Vietnam War, 172 ships from the NDRF were activated and in service, which, along with other charters and general agency agreements, brought the total MSTS-controlled ship inventory up to 501 ships (excluding all special project ships).[23]

The requirements of the Vietnam conflict having been satisfied, the MSC-controlled* fleet and the active US Merchant Marine once again were scaled down. As of 30 June 1978, the MSC-controlled fleet totaled 111 ships, including 69 vessels in the nucleus fleet and 42 ships under MSC charters. Of the 111 ships in the MSC fleet, only 30 are US flag vessels capable of carrying military dry cargoes.[24] The remainder are fleet support vessels, tankers, oilers, and other special purpose ships.

The history of United States ocean transportation, particularly in terms of the capability of the merchant marine to serve as a naval auxiliary, has literally been a story of "feast or famine." The beginning of every major military action requiring significant sealift capability has seen the necessity for a rapid and large buildup in ocean transport resources in order to adequately support military needs. The cessation of hostilities, on the other hand, found the Nation with a fleet of ships that were considered to be too large, too expensive, and too poorly designed to be competitive in world markets. The resulting disestablishment of the fleet placed the Nation back into the position of being ill prepared to meet contingency military needs. A major factor to consider in this cycle is that in the past the United States has been afforded the luxury of a relatively long period of time to reconstruct lagging ocean transport assets. In all probability, that luxury will not be available in the future.

SEALIFT TODAY

Military Sealift Command

The inclusion of transportation services in the conceptual framework of the single-manager plan marked another milestone in sealift development. In May 1956 the Secretary of Defense designated the Secretary of the Navy as DOD Single Manager for Ocean Transportation, and the Commander, MSTS, as Executive Director for the Navy Secretary. This designation, rather than being a radical organizational and functional responsibility change for DOD transportation, merely defined and formalized the *de facto* relationships that had existed since 1949.[25] This designation was

*The MSTS was redesignated the Military Sealift Command (MSC) in 1970.

used until 1970 when the MSTS was redesignated the Military Sealift Command (MSC); MSC is a fleet component of the operating forces of the Navy.

The mission of the Military Sealift Command contains five main elements. They are: to provide contingency sealift support for military forces worldwide; to develop plans and capabilities for emergency expansion; to provide logistical sealift support to DOD components in peacetime contingency situations; to provide DOD ocean shipping for nontransportation purposes, such as hydrographic research, cable laying, and space capsule recovery operations; and to man and operate Navy fleet support ships.

The organization of MSC is rather straightforward. The Commander, MSC reports directly to the Chief of Naval Operations (CNO) on all operational concerns; at the same time, he receives guidance on policy and procurement and financial matters from the Assistant Secretaries of the Navy for Manpower, Reserve Affairs, and Logistics, and for Financial Management. The Joint Chiefs of Staff direct allocation of the sealift resources of MSC in support of the services.

Headquarters, MSC, is in Washington, D.C., with four major subordinate headquarters at Yokohama, Japan; Bremerhaven, Germany; Oakland, California; and Bayonne, New Jersey. Subarea command headquarters are currently located in New Orleans, Louisiana, and Naples, Italy. Smaller MSC offices, as well as individual representatives, are also established. There are currently 14 offices worldwide—one unit at Southport, North Carolina, and 54 representatives at major ports throughout the world. Current MSC personnel strength is approximately 5,200, including some 3,600 civilian mariners. The majority of MSC's manpower is employed aboard ships, with only 1,400 individuals assigned to jobs ashore.[26]

The sealift resources of MSC are acquired from four main sources: the MSC-controlled fleet; the US flag merchant marine; the National Defense Reserve Fleet; and foreign flag merchant marine shipping, including the Effective US Control Fleet (EUSC). Each of these resources provides a particular type of capability, can be identified by its own particular characteristics, and comes complete with its individual issues and problems. Each source will be described and discussed separately.

292-919 O - 79 - 2

MSC-Controlled Fleet

The current MSC-controlled fleet consists of 111 ships, divided into 2 fleets, the MSC nucleus fleet and the MSC-controlled commercial fleet. The nucleus fleet is made up of 69 vessels, both government-owned and chartered. Only six dry-cargo vessels, suitable for sealift of military supplies, are in the nucleus fleet. These six ships are all specialized vessels. Three are ice-strengthened, two are roll-on/roll-off, and one is a heavy-lift ship. The MSC-controlled commercial fleet of 42 ships includes 27 dry-cargo-capable breakbulk ships in the chartered fleet, as well as tankers chartered by MSC to transport crude oil for the Department of Energy's Strategic Petroleum Reserve Program.

Manning for the MSC-controlled fleet is a mixture of civil service and private crews. Except for bareboat-chartered tankers, the bulk of the nucleus fleet is civil service manned while the commercial fleet is manned by the private owners with seamen being acquired through union hiring halls.

US Flag Merchant Marine

As seen from the introductory discussion of ocean transportation, since the earliest days of our Nation's existence we have relied heavily on the merchant marine fleet to meet the challenges of wartime sea transport. In the past the merchant marine has made available a varying number of ships compatible with military sealift requirements. Ship availability has been dependent on factors such as world market needs, worldwide and national economic conditions, and national security posture. At the present time, the US merchant fleet is at a critically low point in its capability to support military lift requirements. The active merchant marine inventory of dry-cargo ships has steadily declined to approximately 290, which is about one-half of the total near the end of the Vietnam war. The US tramp fleet has practically vanished. The majority of the remaining breakbulk fleet is, for the most part, operated by the scheduled carriers. One of the primary reasons for the inadequate condition of the US merchant fleet has been the deleterious effect the maritime unions have had on the development of US ocean transportation. While it appears that recent activities of the unions have been directed toward more cooperative arrangements with the maritime industry, earlier peri-

ods have been characterized by frequent strikes over the most insignificant grievances and demands for wages that virtually priced the US fleet out of world competition. Even though these unreasonable demands from the unions arose in reprisal for abuses perpetrated on seamen by the shipping companies since the end of the last century, their effect was no less severe. Past excesses of union demand have been recognized by union leaders who have begun to seek rapprochement with industry.[27] The shortsightedness of excessive union demands has resulted in not only a significant reduction in the US share of the world shipping market, but also a dramatic reduction in the number of seafaring jobs available. This lack of available jobs has caused many qualified seamen to seek other employment and has created the condition whereby manpower requirements for peacetime needs exceed the number of available qualified seamen.[28] This manning shortfall could be a critical factor in any effort to effect a surge buildup of US sealift capacity.

The National Defense Reserve Fleet (NDRF)

The National Defense Reserve Fleet, once an excellent source of ships capable of providing military sealift, has dwindled to the point of being of questionable value. This mothballed fleet, a responsibility of the Maritime Administration had, as of the spring of 1977, only 143 ships having value in the military sealift role. One hundred and thirty-two of these are World War II-vintage Victory ships, whose usefulness and life expectancy are subject to valid questioning.

Foreign Flag (Effective US Control Fleet)

The Effective US Control Fleet (EUSC) had its beginning during the 1920's when US corporations began operating a number of ships under Panamanian and Honduran registry to take advantage of liberal corporate laws and tax advantages.[29] The use of the fleet for defense purposes and the use of the term "effective US control fleet" came about as a result of a program of Panamanian registry that was an attempt to circumvent the provisions of the Neutrality Act of 1939 and allow the United States to provide essential materials to European allies. The idea that the EUSC Fleet could be counted upon as a viable part of our contingency or

wartime sealift capability was accepted by the Department of Defense in the early 1960's based on four reasons: first, contracts in effect between MARAD and affected shipowners included callup procedures; second, the laws of Honduras, Panama, and Liberia contained no restrictions, and these countries were likely to remain neutral in time of war; third, the precedent of World War II when Honduran and Panamanian registered vessels were fully assimilated in the US war effort; and finally, EUSC Fleet shipowners had obtained war risk insurance which indicated their intent to serve when called.[30]

As of 1 February 1977, the EUSC Fleet consisted of over 400 vessels. This would appear to be an excellent source of contingency sealift, both from the viewpoint of numbers of ships and relative newness of the fleet. A closer look at the EUSC Fleet reveals several shortcomings that raise serious doubts concerning its utility. First, over 300 ships of the fleet are tankers, unsuitable for cargo carriage, and in many cases, too large for military utility due to limited port capability. Eighty-five are bulk-cargo carriers, with limited military potential. There are nine transports in the fleet that would be useful for military purposes, but a word of caution must be inserted at this point. Many of the new modern commercial ships are of a highly sophisticated, specialized design. These ships are, for the most part, not self-sustaining, that is, they require complex cargo handling support facilities ashore—facilities which, during wartime, would not, in all likelihood, be available.[31]

Another serious question concerns the responsiveness of the EUSC Fleet to national security requirements. Incidents associated with the sealift buildup of the Vietnam war and the 1973 Middle East war tend to support the contention that reliance on the EUSC Fleet would be a mistake.[32] These incidents, one a result of direct foreign government intervention, and another stemming from the refusal of the crew to sail into the combat zone, provide an adequate basis for the position taken by a previous Assistant Secretary of Defense, who, before a congressional subcommittee, stated the view that the EUSC Fleet should not be considered a substitute for US flag shipping in meeting defense needs.[33] That view was extrinsically reinforced by a 1973 Executive Order by the President of Liberia which threatened to fine any Liberian flag vessel $50,000 for carrying military cargo for either side.

Allied Shipping

A final source of sealift capability is from the resources of our allies. Merchant ships of our NATO partners have been earmarked for use during an American reinforcement of NATO. While total merchant fleet assets of NATO member nations exceed anticipated wartime requirements, this source is not without drawbacks. First, as with the United States, a high percentage of our allies' fleets are registered under flags of convenience, making uncertain their immediate availability.[34] Early availability of NATO shipping may be somewhat problematical from another standpoint; only 6 of the 15 NATO member nations have the power to take over private shipping prior to the initiation of hostilities—which could degrade alliance response to warnings of a possible Warsaw Pact attack.[35] There is also disagreement whether, during a rapidly building, intense war situation, it would be possible to marshal projected sealift assets for use in an American deployment, due to other mission requirements of owner nations. Finally, and most importantly, shipping assets of NATO allies would be available only for a NATO reinforcement, and would contribute nothing to US strategic mobility needs during other contingencies. To expect that allied shipping support would be available under other circumstances would be to ignore the hesitancy on the part of our allies to support us in the past, such as during the resupply of Israel in 1973.

Efforts to Improve Sealift Capability

While the picture of the United States sealift capability is not an optimistic one, considerable effort is being made to improve both the US Merchant Marine and the MSC organic capability. Efforts to improve sealift capability are found mainly in two general categories of programs: government financial and legislative support to the merchant fleet, and sealift enhancement programs that are primarily concerned with improving the capability of government-operated fleets. Each of these areas of improvement efforts will be examined, and a brief discussion of the benefits of the programs will be presented.

GOVERNMENT MARITIME SUPPORT PROGRAMS

Since the beginning of the Spanish-American War in 1898, the first US war in which the Nation had to rely upon its merchant marine to support an overseas military operation, the Federal Government has recognized the vital role played by the merchant fleet as an essential element in our national security posture.

Shipping Act of 1916

The beginning of World War I found the Nation with inadequate shipping assets to meet military and commercial requirements. In an effort to make up the deficiency, Congress enacted, on September 7, the Shipping Act of 1916. The act established a five-member panel, the Shipping Board, for the purpose of creating a naval auxiliary, a naval reserve, and a merchant marine to meet the requirements of the United States.[36] The primary provisions of the Shipping Act of 1916 were designed to provide for shipbuilding for the war effort. The Shipping Board was marginally successful. Even though a large number of ships were built, over 2,300 total, the majority of the ships it contracted for were not delivered until after the Armistice.[37]

Merchant Marine Act of 1920

While the Shipping Act of 1916 contained language that referred to a naval auxiliary, and implied a national policy statement, it was not until the Merchant Marine Act of 1920 that a national policy concerning the relationship of the merchant marine to national defense was enunciated in a clear statement of purpose. The act declared:

> It is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best-equipped and most suitable types of vessels sufficient to carry the greater part of its commerce and serve as a naval and military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States.[38]

This act, in addition to stating national maritime policy, also attempted to promote new trade routes, and provide for the orderly transfer to private ownership of the large ocean fleet constructed under the provisions of the 1916 Shipping Act.[39]

By the late 1920's, Congress faced a dilemma regarding the future of the merchant marine. On the one hand, US flag shipping was experiencing increasing difficulty in competing in foreign trade. The difficulty was caused in part by the growing obsolescence of the US war-built merchant fleet and in part by ever-widening differences between US and foreign operating costs. The other half of the dilemma was due to congressional reluctance to authorize direct subsidies for ship construction and operation.[40] To eliminate this dilemma, Congress enacted the Merchant Marine Act of 1928.

Merchant Marine Act of 1928

In an effort to provide a means for US flag carriers to develop capital for ship replacement, the Merchant Marine Act of 1928 authorized the Postmaster General to contract with US citizens for the transportation of mail.[41] This act was, in effect, a subsidy program, but one designed in such a manner as to appease congressional critics. In addition to providing liberal contract terms for US firms, the act also moved to stimulate ship construction by increasing to $250 million the construction-loan fund that had been authorized by the Act of 1920. This fund was used to build 31 new ships and to recondition 41 others.[42]

As had previous legislation that provided subsidies or subsidy-like assistance to the maritime industry, the 1928 Act came under persistent criticism, much of which was undeserved. The worsening economic situation during the 1930's engendered a strong demand for the revision or repeal of the act. Several investigative bodies published findings which portrayed a pattern of "opportunism, shoddy performance, and both public and private irresponsibility" surrounding the execution of ocean mail contracts. A select committee chaired by Senator Hugo Black called for repeal of the act and an end to continued aid to the maritime industry.[43]

The recognized deficiencies of the 1928 Act and repeated disclosures of malfeasance and improprieties led eventually to a Presidentially supported attempt to develop a new subsidy program. After more than a year of heated and wide-ranging debate, Congress finally passed the Merchant Marine Act of 1936.

Merchant Marine Act of 1936

The Merchant Marine Act of 1936, clarified, combined, and enhanced the statements of national policy of previous legislation regarding the role of the merchant marine as a naval auxiliary. The Declaration of Policy contained in Section 101 of the act stands today, along with several subsequent additions, as the basic policy position of the United States relative to the merchant marine:

> It is necessary for the national defense and development of its foreign and domestic commerce that the United States shall have a merchant marine (a) sufficient to carry its domestic waterborne commerce and a substantial portion of the waterborne export and import foreign commerce of the United States and to provide shipping service on all routes essential for maintaining the flow of such domestic and foreign waterborne commerce at all times, (b) capable of serving as a naval and military auxiliary in time of war or national emergency, (c) owned and operated under the United States flag by citizens of the United States insofar as may be practicable, and (d) composed of the best-equipped, safest, and most suitable types of vessels, constructed in the United States and manned with trained and efficient citizen personnel. It is hereby declared to be the policy of the United States to foster the development and encourage the maintenance of such a merchant marine.[44]

The act, in an effort to develop and encourage such a merchant fleet, created a new agency, the US Maritime Commission, and provided it with a variety of means through which to carry out its task of promoting and developing US maritime shipping. These means include:

1. Construction-differential subsidies
2. Operating-differential subsidies
3. Loan granting powers
4. Purchase credit allowances
5. Powers to restrict sales and use of vessels acquired by the Commission
6. Payment for required national defense features on subsidized ships
7. Low-interest construction loans
8. Income tax benefits for shipowners
9. Construction of vessels for private charter
10. Subsidies to offset payments to foreign competitors
11. Guarantee of ship mortgages
12. Training of merchant seamen
13. Authority to prescribe wage and other benefits to merchant seamen
14. Authority to requisition or purchase ships required for national defense needs.[45]

The 1936 act formed the basis for current government programs of support to the US merchant marine. Since 1936, there have been two additional pieces of legislation which were designed to give support to a lagging merchant marine—the Merchant Ship Sales Act of 1946 and the Merchant Marine Act of 1970.

Merchant Ship Sales Act of 1946

The end of World War II found the United States with the largest merchant fleet in the world. Unfortunately, it was the US Government and not her citizens that owned and operated the fleet. Between the passage of the Merchant Marine Act of 1936 and the end of 1945, more than 6,000 merchant-type ships were built by the US Maritime Commission. Over 5,000 vessels remained after the Japanese surrender.[46] In an effort to demobilize this giant fleet and provide low-cost shipping to US citizen shipowners, Congress passed the Merchant Ship Sales Act of 1946.

The act gave preference to US citizens in purchasing ships from the war-built fleet and provided trade-in allowances in exchange for older ships. The preamble to the act (section 2) reaffirmed the dual role of the merchant marine, that of naval auxiliary and commercial asset, and added as a key element of national maritime policy the need for efficient American-owned shipbuilding facilities.[47]

Perhaps one of the most significant elements of the act, at least for the period closely following World War II, was the establishment of the National Defense Reserve Fleet (NDRF). Under the provisions of the act, all ships not sold or chartered under the act would be placed in a government-owned national defense reserve. At the end of 1946 there were 1,421 NDRF ships located in government anchorages. The level of the NDRF has steadily declined since Fiscal Year (FY) 1958. As of mid-1977 there were only 143 vessels in the NDRF that possessed military utility as cargo transporters.[48]

The Merchant Marine Act of 1970

The most significant changes to US maritime policy and programs, since the enactment of the Merchant Marine Act of 1936, occurred with the passage of the Merchant Marine Act of 1970.[49] While the 1936 act had provided the bedrock upon which the modern merchant marine was formed, it was not completely successful in encouraging the development of a balanced cargo fleet.[50] The Act of 1970 sought to correct this deficiency by expanding, modernizing, and increasing the efficiency of the merchant fleet through a number of revisions to the earlier legislation.

The 1970 Act authorized the establishment of a Commission on American Shipbuilding to track the progress of American shipbuilding programs. It relaxed restrictions on operating subsidy eligibility, and reset the upper limits on maximum construction subsidies. The act deferred taxes on earnings gained from foreign and domestic trade if the funds were used to establish a capital fund for new ship construction and rehabilitation. The act tasked the Secretary of Commerce to determine the type of vessels to be built with construction subsidies. The Secretary, through the Maritime Administration, initiated a series of programs designed to produce ships for all segments of the merchant fleet.

The 1970 Act has accomplished a number of significant achievements. Despite a worldwide drop in shipping, and the economic difficulties associated with the world's energy problems, the productivity of the US merchant fleet has climbed, 66 new ships and 27 reconstructed vessels have been completed under subsidized programs, and the percentage of US liner cargo is at the highest point in 20 years.[51] At the same time, however, it should be noted that the results of the programs stimulated by the act have not met completely the expressed objectives of the legislation. The construction rate of new ships lags significantly behind the 30-year goal of the act, and the US flag fleet, still unable to adequately compete in the world markets, carries a ridiculously small percentage of our foreign commerce.

Government Aids to the Merchant Marine

The end product of the legislation outlined above is a series of government programs that support the merchant marine and the maritime industry. Of these programs, the principal aids include: operating-differential subsidies, construction-differential subsidies, cabotage laws, tax relief programs, and cargo preference laws. A brief look at each of these aids and how well each of these programs has done its job will be useful.

Operating-Differential Subsidies (ODS). These subsidies were authorized by the 1936 Merchant Marine Act and were designed to enable US shipping lines to compete with foreign flag carriers by providing payments to cover higher operating costs involving the use of American crews. Four elements of operating costs are eligible for subsidy: costs of maintenance, repair costs not covered by insurance, crew wages, and insurance.[52]

The fundamental principle behind the operating differential subsidy program is parity—parity with the operating costs of competing foreign carriers. Much of the cost differences can be traced to a basic dissimilarity in the standards of living of American and foreign seamen. As increases in subsidized costs occur they are normally borne directly by the government, a condition that has led critics of the subsidy programs to conclude that subsidies lessen the economic incentives necessary to reduce or eliminate subsidy programs. In other words, operating subsidies become a self-fulfilling prophecy.[53] Not all US shipping lines receive

operating-differential subsidies. In fact, at the end of 1976, only 13 of 176 companies owning US flag ships received subsidies for all or part of their ships.[54] Planned Federal budget outlays for FY 1979 for operating-differential subsidies are $337 million. This approximates the 1978 level for liner ships and is somewhat lower for some bulk carriers due to increased demand.[55]

Construction-Differential Subsidies. A construction-differential subsidy is intended to aid shipbuilders by absorbing excess costs incurred in building in an American shipyard rather than overseas. Under this program the Federal Government will have a ship built in an American shipyard, pay the cost of construction, and then sell the vessel to a US citizen to be used in the foreign commerce of the United States.[56] The provisions of the 1970 Merchant Marine Act pertaining to construction subsidies provided the necessary financial incentives to spur research and development activity and have significantly increased activity in American shipyards. In mid-1977 these yards had under construction, or on order, 71 ocean-going merchant vessels.[57] Shipyard order book backlogs have additionally increased since that time. Planned construction-differential subsidies for the FY 1979 budget are an estimated $532 million.[58]

Cabotage Laws. For centuries, international law and convention have recognized the right of a nation to reserve, for its own flag fleet, the trade along its coasts. The term, "Cabotage Laws," derived from the Spanish and referring to navigation between two capes, or *cabo*, has come to refer to the reservation of these intercoastal rights. In American usage, the term refers not only to the trade along the two coasts, but between the east and west coasts, and between the mainland and offshore states and possessions.[59] There are two features of US cabotage laws. First, only American-built ships may engage in coastal trade, and second, domestic commerce is reserved to US flag vessels. The importance and benefit of cabotage laws today are significantly less than in the past, due to development of additional transportation resources in the United States.

Tax Relief Benefits. The principal tax relief program available to American ship operators is the deferral from income tax payments of profits placed in capital construction reserve funds.[60] US ship operators may establish capital construction funds from

which they may draw funds to buy ships and equipment. Taxes on deposits in the capital construction funds may be deferred if earnings from ships built by use of the fund are reinvested in the fund for future ship construction.[61] In addition to these provisions of the Merchant Marine Act of 1970 there are other tax deferral and credit programs available to US shipbuilders and operators.

Cargo Preference Laws. The cargo preference laws are a group of Federal Statutes that require that a set portion of government cargoes must be moved aboard US flag vessels. Public Law 664, enacted in 1954, provides that when the US Government procures goods, at least 50 percent of the gross tonnage must be carried on privately-owned US flag commercial ships. A second cargo preference law, a 1934 congressional resolution, provides that if a foreign country purchases goods for export from the United States, using US Government loans, these goods must be exported in American ships. A third piece of cargo-preference legislation is a 1904 law requiring all military goods to be shipped in American flag ships when they are available at reasonable cost.[62]

Proposed cargo preference legislation of 1975 (H.R. 1071), which was vetoed by President Ford, would have required that up to 30 percent of US oil imports be carried on US flag ships. Another cargo preference bill, H.R. 1037, was considered by the Congress in 1977, but failed to pass.

The Effects of Subsidy Programs

Programs designed to provide direct and indirect subsidies to the maritime industry have historically been justified for two main goals: their economic benefit to the Nation, and their contribution to national security. A number of studies have questioned the utility of government subsidy programs in reaching these goals.[63]

The economic benefits normally associated with government support to the maritime industry include: favorable impact on the US balance of payments, creation of additional employment opportunities through stimulation of shipbuilding and other maritime industries, and the generation of public revenues through individual and corporate taxes.

One study cited the economic benefits of a 10-year period from 1958 to 1967 as a net of $8.6 billion, including $7.2 billion in balance of payments impact.[64] Another cites the total of 204,000 direct-hire jobs created by the merchant marine, including 67,000 seamen, 61,000 longshoremen, and 76,000 shipyard workers.[65] On the other hand, Gerald R. Jantscher points out in his study of government subsidy programs that measurements of this nature are false because they attempt to equate "impact" with "benefit" and compare the impact with the cost of government subsidy programs to arrive at a measure of government worth.[66] His contention is reinforced by other studies that question the true economic gain of the merchant marine.[67]

Whether the economic goals of the subsidy programs are met or not, it appears that current development of the US Merchant Marine is seriously lagging.

The primary source of sealift augmentation for US contingency or wartime needs is the US Merchant Marine. But, at the present, there are only 290 dry-cargo vessels in the active US flag fleet, a far lower level than the 4,000-plus that we had at the end of World War II. The current fleet is significantly more productive than its 1946 predecessor because it has a large percentage of cargo carriers and container ships. The increase in productivity does not, however, offset the tremendous drop in the availability of ship bottoms.

If the national security posture and ability of the United States to meet its defense treaty obligations are dependent upon the existence of adequate strategic mobility capability, and if adequate strategic mobility capability is inexorably tied to the maintenance of sufficient sealift resources, what measures are being taken to ensure that such adequate resources are available?

IMPROVEMENT IN SEALIFT CAPABILITY

In addition to their regular planning activities, the Maritime Administration and Military Sealift Command have initiated several programs which have been designed to enhance sealift readiness and increase strategic mobility capability. Among the most important of these programs are: the Sealift Readiness Program, the Ready Reserve Force, modernization of the MSC-controlled fleet, and research and development in logistical handling and delivery systems.

Sealift Readiness Program

The Sealift Readiness Program (SRP), a major element of Military Sealift Command's enhancement efforts, establishes procedures by which commercial vessels are called upon to meet military requirements under less than full mobilization conditions. Under the SRP, commercial carriers commit at least 50 percent of their ships for military use in return for a right to bid on MSC cargo. At the present time this program would make available about 120 ships within 60 days of notification.[68] The ships would be called up in phases: 20 percent of committed vessels would be made available within 10 days, an additional 30 percent within the next 20 days, and the remaining ships within the next 30 days.

Military and industry planners are not completely satisfied with the SRP and the ramifications of its activation. In testimony before the House Committee on Merchant Marine and Fisheries in mid-1977, Vice Admiral Edward W. Cooke, Deputy Chief of Naval Operations for Logistics, warned that there had been no detailed analysis conducted to determine the economic effect of calling up ships under the SRP. He also cautioned as to the costs to the government involved in the program. He stated:

> It is a big step . . . to invoke [the] Sealift Readiness Program and take . . . up to 50 percent of their available ships. It would be very costly to the government to do this because we would have to pay for charter of the ships plus probably the losses incurred by the loss of these other cargoes.[69]

In separate congressional hearings, the Honorable John I. Bennett, Assistant Secretary of Defense, Installations and Logistics, warned:

> We have concern for implementing [the SRP] program, however, since these ships would be removed from their normal trade routes and thus if kept for an extended period of time, the US competitive position in the world shipping market could be damaged.[70]

To counter some of this concern over the use of the SRP, the Defense Department plans to rapidly call for ships out of the NDRF to replace the ships of the SRP so that they can be returned to their assigned trade routes. The Maritime Administration has es-

timated that the first vessel called out of the NDRF could be on berth, ready to accept cargo, in 21 days. In an effort to shorten that preparation time some ships in the NDRF are being upgraded to form the Ready Reserve Force (RRF).

The Ready Reserve Force

So as to increase immediate surge capability, the Navy recommended that the equivalent of 30 Victory ships be maintained in such a state of readiness that they could be on berth in 10 days.[71] This suggestion formed the basis for the Ready Reserve Fleet. Some ships, already in the NDRF, are being maintained at such level as to be ready for the 10-day response. At the present time there are eight ships totaling more than 85,000 deadweight tons in the RRF.[72] Seatrain is undergoing refurbishing to go into the fleet, and three additional Seatrains are scheduled for the RRF during FY 1979. Funding, for upgrading ships in the NDRF under this program, is planned through FY 1982.[73] However, with the revocation of the state of national emergency as of 14 September 1978, ships cannot be called up from the NDRF without a declaration of national emergency by the President. That could, of course, be overcome by amendment of the Merchant Marine Act of 1936 and submission of such legislation is pending.

The utility of the RRF is uncertain, however, when manpower availability is examined. For that matter, the use of any ship in the NDRF is open to question, for it is always possible that adequate crews will not be available to man the mothballed ships. By 1984 the supply of trained Deck and Engine Officers may equal only 75 percent of peacetime demands. This shortage does not reflect manning required to activate the NDRF. According to a 1974 MARAD study, if all ships in the NDRF were activated, an additional 9,098 crewmen would be required, not including reserve requirements.[74]

The Department of the Navy feels that, even with the capabilities of the merchant marine and recalled vessels of the NDRF, modernization of the MSC-controlled fleet is necessary. One of the more practicable of the modernization programs considered has been the controversial "build and charter" program.

The Build and Charter Program

The basis for the build and charter method of acquiring new ships and enhancing the MSC-controlled fleet's sealift capability is that ships are built using private capital, and are made available to the MSC for long-term charter. However, this method of procuring additional sealift capability has been controversial in recent years, since it raises serious questions of congressional control, even though MSC has procured 28 ships in the past, some of which had congressional approval.

Payment for ships acquired under the build and charter program is made from the Navy Industrial Fund. This, in effect, removes new ship construction from congressional oversight normally applied during the process of approval of appropriated funds. The program, which added nine sealift-class tankers to the US flag fleet,[75] has drawn severe criticism from Congress, and a General Accounting Office report concluded that there was no economic advantage to the leasing program based on the yield of current Government bonds and that the Navy had selected the build-charter approach, not on the basis of economic analysis, but because "... it could not obtain procurement funds to purchase new tankers and would rather conserve its procurement funds for combatant ships."[76] The Navy and DOD, on the other hand, consider the build-charter method legitimate, economical, and a viable method of procuring sealift capability via long-term charters of US flag private vessels.

Other programs, in addition to those designed to increase the number of ships available, are being undertaken on behalf of sealift readiness enhancement efforts. Some of these programs are concentrating on research and development in the areas of cargo handling and port environment. With the increase in the numbers and capabilities of modern containerships, the majority of which are not self-sustaining, work is required in finding innovative means of offloading these vessels, both over unimproved beaches and in undeveloped port facilities.

Logistics Over the Shore (LOTS)

In July 1977 a series of tests known as Operation Main Test were conducted along the coast of Virginia. These tests, involving more than 2,000 troops, 2 containerships, 6 lighter-aboard-ship

(LASH) barges, and 2 Seabee barges, were conducted to develop procedures for delivering containerized cargo from ship to shore in an undeveloped port area.[77] These procedures, a phase of ongoing logistics-over-the-shore (LOTS) tests, demonstrated that, given proper technique and planning, outsize and containerized equipment can be discharged from modern cargo ships in areas of minimal port development. While these tests were successful in demonstrating an offload capability in principle, the practicality of these techniques in a combat environment has yet to be demonstrated.

Container Offloading and Transfer System

Another innovation in cargo handling that is under development is the Container Offloading and Transfer System (COTS), a Navy program to support LOTS capabilities. This system involves the use of deck-mounted commercial cranes that would be added to current and future containerships in time of emergency need. The cranes would be used to offload containers onto lighters, or barges, that would shuttle the cargo to the shore.[78] Tests have been conducted to determine the capability for offloading cargo using COTS procedures in State 3 seas (a moderate sea with 3- to 5-foot waves). Research in programs such as LOTS and COTS is designed primarily to enable defense transportation and logistical planners to take full advantage of the significant benefits of containerization without the need for highly sophisticated port facilities normally associated with containership operations. A breakthrough in equipment or procedure in either of these areas would significantly enhance US mobility capability.

ENDNOTES

1. "From John Paul Jones to Superships, Sea Played Vital Role in US Life," *Commerce Today* 5 (7 July 1975): 18.

2. For a detailed analysis of American ocean trade prior to the Civil War, see Carl E. McDowell, *Ocean Transportation* (New York: McGraw-Hill, 1954), pp. 24-27.

3. Ibid., p. 28.

4. US, Department of the Navy, *Military Sea Transportation Service*, Navpers 10829-C, prepared by Bureau of Naval Personnel (Washington, DC: Government Printing Office, 1968), p. 1.

5. Nicholas Johnson, "The State of Our Merchant Fleet," *Naval Review* (Annapolis, MD: US Naval Institute, 1966), p. 26.

6. An excellent history of the Naval Overseas Transportation Service is contained in Lewis P. Clephane, *History of the Naval Overseas Transportation Service in World War I*, by Naval Historical Division (Washington, DC: Government Printing Office, 1969).

7. Ibid., p. 1.

8. "From John Paul Jones," *Commerce Today*, p. 19.

9. Jack C. Ingle and Dan B. Burden, Jr., "Department of Defense Transportation: Evolution, Status and Problems," M.S. Thesis, Air Force Institute of Technology, 1968, p. 62.

10. *Military Sea Transportation Service*, p. 5.

11. See Chester Wardlow, *The Transportation Corps: Responsibilities, Organization and Operation*, Office of the Chief of Military History, United States Army (Washington, DC: Government Printing Office, 1951), pp. 200-211; contains detailed analysis of relationships between Army and Navy relative to ocean shipping during World War II.

12. McDowell, *Ocean Transportation*, p. 459.

13. For the Army viewpoint of the debate that accompanied postwar attempts at service unification and interpretation of the transportation function, see Harry B. Yoshpe, *Impact of Unification, 1946-1950, The Transportation Corps in the Current National Emergency*, Historical Report No. 6, Office of the Chief of Transportation (Washington, DC: Department of the Army, 1956). Much of the continuity of activity presented in this section was gained from Mr. Yoshpe's history.

14. Ibid., p. 39.

15. *Reorganization Plan No. 21*, 64 Stat. 1273 (1950).

16. McDowell, *Ocean Transportation*, p. 459.

17. Ibid.

18. Neville Brown, *Strategic Mobility* (New York: Frederick A. Praeger, 1963), p. 128.

19. US, Congress, Senate, Committee on Interstate and Foreign Commerce, *Military Sea Transport Service, Hearings*, 83d Cong., 1st sess., May 28, 1953 (Washington, DC: Government Printing Office, 1953), p. 47.

20. Albert W. Gatov, "National Security Aspects of Ocean Transportation," *Proceedings of the American Merchant Marine Conferences* (New York: The Propeller Club of the US, 1954), p. 181.

21. US, Congress, House, Committee on Merchant Marine and Fisheries, *Study of Operations of Military Sea Transportation Services, Hearings*, 83d Cong., 2d sess., 1954 (Washington, DC: Government Printing Office, 1954), p. 55. See also "US Military Sea Transportation Service," Presentation for the Joint Logistics Review Board, Washington, DC, 19 June 1969, p. 10.

22. Lane C. Kendall, "US Merchant Shipping and Vietnam," *Naval Review* (Annapolis, MD: US Naval Institute, 1968), p. 131.

23. Ibid., p. 135.

24. Military Sealift Command, Unpublished "Weekly Asset Report," Report No. M-321/0013, 30 June 1978.

25. US, Congress, House, Committee on Armed Services, *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management and Terminal Service, Hearings before the Special Subcommittee of Transportation*, September-October 1971 (Washington, DC: Government Printing Office, 1971), p. 6382.

26. Much of the data and descriptive information concerning current MSC capabilities was excerpted from the Military Sealift Command Briefing, 20 May 1977.

27. See the comments of Paul Hall, President of the Seafarers International Union, in Lester Velie, "They're Finding Better Ways Than Strikes," *Readers Digest* 104 (March 1974): 173-180; and "Maritime Labor: The Ally Within," *Seapower* 19 (February 1976): 11-16.

28. For an excellent overview of maritime union problems, see Everett P. Lunsford, Jr., "Our Merchant Mariners and Their Unions," *US Naval Institute Proceedings* 101 (May 1975): 66-85.

For a more in-depth analysis, see Joseph J. Ball, *The Government Subsidized Union Monopoly: A Study of Labor Practices in the Shipping Industry* (Washington, DC: Labor Policy Association, 1966).

29. US, Department of Commerce, *Effective United States Control of Merchant Ships: A Statistical Analysis, 1970*, prepared by Irvin M. Heine and Muriel W. Coe (Washington, DC: US Maritime Administration, 1970), p. 2.

30. The rationale for DOD acceptance of the validity of the EUSC Fleet concept was contained in a letter from Deputy Secretary of Defense Roswell L. Gilpatrick to Senator Warren Magnuson dated 17 November 1961, cited in Ibid., p. 4.

31. For an excellent general discussion of the military suitability of ships currently being built under construction differential subsidy programs, see US, Congress, House, Committee on Merchant Marine and Fisheries, *Merchant Marine Oversight—Part I, Hearings before the Subcommittee on Merchant Marine*, 94th Cong., 1st sess., 1975 (Washington, DC: Government Printing Office, 1975), p. 9.

32. Two such incidents, one involving the direct actions of a foreign government, and the other related to the refusal of a foreign crew to sail to the combat zone are discussed in Kendall, "US Merchant Shipping," p. 137.

33. US, Congress, House, *Merchant Marine Oversight—Part I*, p. 12.

34. I. C. Kidd, Jr., "Strategic Mobility: Logistics Unlimited," *The Atlantic Community Quarterly* 16 (Spring 1978): 39.

35. General George S. Brown, USAF, *United States Military Posture for FY 1979* (Washington, DC: Office of the Chairman, Joint Chiefs of Staff, 20 January 1978), p. 100.

36. Public Law 260, 64th Cong., Sec. 1.

37. Samuel A. Lawrence, *United States Merchant Shipping Policies and Politics* (Washington, DC: Brookings Institution, 1966), p. 40.

38. *Merchant Marine Act of 1920, Statutes at Large*, 41, Sec 1, 988 (1920).

39. Gilman G. Udell, *Laws Relating to Shipping and Merchant Marine*, compiled by the Superintendent, Document Room, House of Representatives (Washington, DC: Government Printing Office, 1951), p. 58.

40. Lawrence, *United States Merchant Shipping*, p. 43.

41. *Merchant Marine Act of 1928*, Statutes at Large 45, Sec. 693.

42. Carl E. McDowell and Helen M. Gibbs, *Ocean Transportation* (New York: McGraw-Hill, 1954), p. 257.

43. Lawrence, *United States Merchant Shipping*, p. 45. (For a more in-depth review of the historical development of US maritime policy, see Lawrence, *US Merchant Shipping*, Chapter 2, pp. 32-57.)

44. *Merchant Marine Act of 1936*, 49 Statutes at Large, Chapter 858, Title I, Sec. 101, p. 1985 (1936).

45. Comptroller General of the United States, *Report on Audit of United States Maritime Commission*, H. Doc. 465, 81st Cong., 2d sess., 1950, p. 2, as cited in McDowell, *Ocean Transportation*, p. 258.

46. Clinton H. Whitehurst, Jr., "The National Defense Reserve Fleet: Past, Present, and Future," *US Naval Institute Proceedings*, February 1977, p. 27.

47. *Merchant Shipping Sales Act of 1946*, 60 Stat. 41.

48. US, Department of Commerce, *MARAD 1971, Year of Breakthrough*, The Annual Report of the Maritime Administration for Fiscal Year 1971 (Washington, DC: Government Printing Office, 1971), p. 69.

49. *Public Law 496, An Act to Amend the Merchant Marine Act of 1936*, 84 Stat. 1018 (1970).

50. Irwin M. Heine, "US Merchant Marine: Right on Course," *Commerce America* 1 (22 November 1976): 6-9.

51. Robert J. Blackwell, "The Maritime Administration," *Seapower* 20 (4 April 1977): 45.

52. *Public Law 496, An Act to Amend the Merchant Marine Act of 1936*, 84 Stat. 1018 (1970).

53. Nicholas Johnson, "The State of Our Merchant Marine," *Naval Review* (Annapolis, MD: US Naval Institute, 1967), p. 129.

54. Heine, "US Merchant Marine: Right on Course," p. 9.

55. US, Office of Management and Budget, *The Budget of the United States Government: FY 1979* (Washington, DC: Government Printing Office, 1978) p. 149.

56. US, Library of Congress, Legislative Reference Service, *Subsidy and Subsidy Effect Programs of the US Government*, prepared for the Joint Economic Committee, 89th Cong., 1st sess., 1965 (Washington, DC: Government Printing Office, 1965), p. 55.

57. Blackwell, "The Maritime Administration," p. 46.

58. US, Office of Management and Budget, *FY 1979 Federal Budget*, p. 149.

59. Gerald R. Jantscher, *Bread Upon the Waters: Federal Aids to the Maritime Industries* (Washington, DC: Brookings Institution, 1975), p. 45.

60. US, Library of Congress, *Subsidy and Subsidy Effect Programs*, p. 53.

61. *Public Law 91-469*, sec. 21, 84 Stat. 1026, 21 October 1970.

62. Johnson, "The State of Our Merchant Marine," pp. 135-136.

63. For examples of the types of studies mentioned, see Robert E. McCleave, "The National Defense Requirement for a US Flag Merchant Marine," *Naval War College Review* 21 (June 1969): 64-72; and Jantscher, *Bread Upon the Waters*.

64. James R. Barker, *The United States Merchant Marine in National Perspective* (Lexington, MA: Heath Lexington Books, 1970), p. 1.

65. US, Congress, House, Committee on Merchant Marine and Fisheries, *Merchant Marine Oversight - Part I, Hearings before the Subcommittee on Merchant Marine of the Committee on Merchant Marine and Fisheries*, 94th Cong., 1st sess., 1975 (Washington, DC: Government Printing Office, 1975), p. 290.

66. Jantscher, *Bread Upon the Waters*, p. 110.

67. See, for example, *The Economic Value of the United States Merchant Marine* (Evanston, Ill.: Northwestern University, 1961), which concluded that there were little, if any, economic gains from government subsidy programs.

68. General George S. Brown, USAF, *US Military Posture for FY 1979* (Washington, DC: Government Printing Office, 1978), p. 99.

69. US, Congress, House, Committee on Merchant Marine and Fisheries, *Tanker Construction and Cargo Equity, Hearings*, 95th Cong., 1st sess., 1977 (Washington, DC: Government Printing Office, 1977), p. 25.

70. US, Congress, House, Committee on Merchant Marine and Fisheries, *Merchant Marine Oversight - Part I, Hearings*, p. 8.

71. *Military Sealift Command*, MSC Command Briefing (typewritten), current as of 20 May 1977, p. 16.

72. "Reserve Forces Provide 10-Day MSC Augmentation," *Sealift* 27 (October 1977): 5.

73. Brown, *US Military Posture for FY 1979*, p. 99.

74. US, Congress, House, Committee on Merchant Marine and Fisheries, *Merchant Marine Oversight - Part I, Hearings*, p. 42.

75. For an in-depth discussion of the build-charter program, see a study by Scott C. Truver, "The Military Sealift Command's Build and Charter Program for Nine Sealift-Class Tankers," *Naval War College Review* 28 (Fall 1975): 32-44.

76. US, General Accounting Office, *Build and Charter Program for Nine Tanker Ships*, B-174839 (Washington, DC: Government Printing Office, 15 August 1973), p. 28; as cited in Truver, "The MSC Build and Charter Program," pp. 39 and 42.

77. Linda M. Quinones, "LOTS Test Indicates Intermodal Carriers Can Support Troops," *Sealift* 27 (October 1977): 8.

78. L. Edgar Prina, "Solving the Sealift Shortage," *Seapower* 19 (October 1976): 25.

CHAPTER III
DEFENSE TRANSPORTATION BY AIR

AIRLIFT DEVELOPMENT

The Army Air Corps had flown transport aircraft since the early 1930's; however, it was not until the early years of World War II that the Nation seriously began to develop an effective military air transport capability.[1] An early effort was the establishment, on 29 May 1941, of the United States Ferry Command as a part of the Army Air Corps. A direct predecessor to the Military Airlift Command, the Ferry Command was charged with providing ferry service of light aircraft from factory to the port of embarkation for delivery to Europe. Along with this capability, and including the limited number of transport aircraft possessed by the Air Corps Materiel Division and General Headquarters Air Force, the Army Air Corps had on hand a total of only 124 transport aircraft on 1 December 1941.[2]

During the initial period of the war, air transport requirements significantly increased, exceeding the capabilities of the fledgling transport service to stay abreast in terms of both men and machines. The call to US civil air carriers for support resulted, within 6 months, in 193 aircraft and over one-third of the airlines' total personnel being made available to the Armed Services.[3]

By early 1942, the pressing need for dedicated air transport capability became extremely clear. In June the Ferrying Command was redesignated the Air Transport Command (ATC). At the same time the 1st Troop Carrier Command was formed. The initial division of responsibility between these two organizations was that ATC was to provide worldwide transport service while Troop Carrier Command would train units for troop carrier service overseas. In reality, the ATC became responsible for providing air transportation for War Department agencies, except those served by troop carrier units. The mission of these troop carrier units was to carry troops and equipment to "effective locations in combat zones from which to begin active combat operations."[4] At its peak in 1945 the Air Transport Command consisted of over 250,000 personnel and 3,000 cargo aircraft, a significant percentage of the 10,138 aircraft that made up the total Army Air Force troop carrier and air transport fleets.[5] The Navy possessed a similar, though smaller, capability in the Naval Air Transport Service (NATS).

After the war, ATC and NATS became prime candidates for consolidation as a part of the clamor for unification of Armed Services functions following the war. The passage of the National Security Act of 1947 with its clear mandate to the Secretary of Defense to eliminate unnecessary duplication and overlapping in several areas, including transportation, signaled the beginning of several consolidations and integrations.[6]

In a 3 May 1948 memorandum to the Joint Chiefs of Staff, Secretary Forrestal directed the establishment of the Military Air Transport Service (MATS), through a consolidation of the ATC and NATS.[7] By this consolidation, effective 1 June 1948, MATS was given the responsibility to provide air transportation for the National Military Establishment under the command and direction of the Air Force Chief of Staff.[8]

On 7 December 1956, the Secretary of Defense designated the Air Force as single manager for military airlift services and MATS was named the single manager operating agency for airlift services.[9] A large capability for airlift was retained in the other services, and within the Air Force, even after the establishment of the single manager concept.

Funding for airlift services provided by MATS was established under the Airlift Services Industrial Fund (ASIF) on 1 July 1958 with a working capital fund of $75 million.[10] Under the provisions for the use of the industrial fund, most operating expenses of the airlift fleet are paid from the capital fund, which is then reimbursed by airlift users from their own appropriated funds.

The organizational development of military airlift passed another milestone on 1 January 1966 when the Military Air Transport Service was redesignated the Military Airlift Command (MAC) and was placed on a level within the Air Force equal to the other Air Force major commands. This redesignation came about, in part, by a growing realization on the part of congressional leaders and DOD planners that airlift capability, both strategic and tactical, was of a degree of importance far exceeding a "support" function. Indeed, it was becoming more and more clear that airlift capabi , when properly organized and administered, was very much a "weapon system" and could critically affect the Nation's overall national security posture.

This realization was once again reinforced when, on 29 July 1974, the Secretary of Defense directed the consolidation of all strategic and tactical airlift into MAC. This directive also required that by the end of 1977, MAC, as the DOD single manager for airlift services, would fulfill all airlift requirements of all of the services.[11] The latest and perhaps the most vivid realization of the critical role played by airlift and its contribution to strategic mobility came in February 1977 when the Military Airlift Command was designated a specified command, a designation which, by law, is reserved for combat forces directly employing weapon systems.

There are still unresolved issues concerning the complete consolidation of airlift responsibility in MAC. For example, the Navy and Marine Corps, citing unique tactical airlift requirements of kind and responsiveness, continue to attempt to purchase new, and renovate existing, airlift resources. Congressional support for the Navy position continues, and the House Armed Services Committee recommended that Navy budgets for FY 1978 reflect tactical airlift upgrading programs.[12] The Department of Defense has concluded, however, that the Navy and Marine airlift needs can effectively be met by MAC and by commercial charter, and programmed no funds for Navy airlift for FY 1979.

If the changes in organizational relationships relative to military airlift have been significant since World War II, the rapid advance in airlift capability over the same period has been astounding. The development of the all-jet transport aircraft was a major event in the evolution of modern air transportation, signaling huge increases in allowable cabin loads, and dramatic extension of operational ranges, at previously unattainable enroute speeds. Not only have the capabilities of cargo aircraft dramatically increased over the past 30 years, but capabilities in the airlift support areas have correspondingly grown.

By today's standards, the airlift assets of World War II were indeed meager. The aircraft of World War II were, for the most part, a mixture of various aircraft that were available in commercial service and could easily be converted to military use. The workhorse of World War II, the C-47 "Gooney bird," was, in civilian dress, the Douglas DC-3 Dakota. The C-46 was derived from the CW-20 Commando, and the famous C-54 Skytrain was the Douglas DC-4 in wartime dress.[13]

The capabilities of these early air transports were, compared to the massive capability of the present C-5 Galaxy, small indeed. The C-47, for example, could carry 5.5 tons for 2,500 miles.[14] By comparison the C-5 Galaxy is capable of transporting over 107 tons of cargo over a normal range of about 3,000 nautical miles.[15] (This range, however, can be further extended through the use of aerial refueling techniques.) The significant increases in airlift capability that have been achieved over the past 30 years have made possible the types of strategies we develop today. The NATO strategy of flexible response would not be possible without the strategic and tactical airlift resources to rapidly deploy large numbers of combat forces. The resources that provide this capability consist of more than the aircraft, as impressive as they are. Also included are: a worldwide command and control network that allows tremendous flexibility of response and real-time control of the airlift force. There is, in being and fully operational, a worldwide network of operating and support bases. On a currently regular basis, MAC directs the activities of more than 85,000 people at some 350 locations in over 30 countries.[16] These personnel and support facilities are immediately available to support deployments of troops and equipment worldwide with relatively short notice. During the past 30 years, significant improvements in both equipment and procedures used in loading and unloading aircraft have been developed, increasing both the speed and effectiveness of materials handling operations. Development of improved data systems and innovations in their application have also played a big part in the development of our airlift capability. Current systems not only allow field commanders to be informed of the status and location of expected deliveries, but also permit airlift operators to schedule aircrews, monitor required maintenance, decrease aircraft turnabout times, and in general, manage the airlift force more effectively.

AIRLIFT IN THE PRESENT AND FUTURE

Military Airlift Command

The Military Airlift Command (MAC) is a major command of the Air Force and, since 1 February 1977, a specified command of the Department of Defense. As a major command, MAC receives administrative and logistical support for day-to-day operations

from the Air Force. In the role as specified command, MAC reports to the President through the Secretary of Defense, making the Commander in Chief Military Airlift Command (CINCMAC) directly responsive to national command authorities during wartime, contingencies, and JCS-directed exercises.

The primary missions of MAC include both airlift and technical service roles. The airlift mission is divided into five main subareas: the deployment of combat forces and their equipment; the employment of those forces by airdrops or airland; air logistic support to deployed forces; aeromedical evacuation of noncombat and combat casualties; and Presidential airlift. Also, technical services are performed by Air Weather Service (AWS); aerial rescue and recovery operations are conducted by crews of the Aerospace Rescue and Recovery Service (ARRS); and photographic and audiovisual products and services are provided by the Aerospace Audiovisual Service (AAVS). While these technical services are a vital part of MAC, tactical and strategic airlift are the primary mission elements. A detailed discussion of technical service functional responsibilities would not be germane to this paper. In fact, only a portion of the airlift mission, strategic airlift, will be covered in detail. Tactical airlift capability will be discussed only in its relation to the strategic mobility problem—the deployment phase of an airlift operation.

An excellent statement of MAC's mission is found in the 1975 House Armed Services Committee hearings on the Posture of Military Airlift:

> The mission of the Military Airlift Command (MAC) is to maintain in a constant state of readiness, the military airlift system to perform all tasks assigned by the Joint Chiefs of Staff (JCS). The military airlift system consists of both strategic and tactical airlift, as well as operating bases and worldwide air lines of communication for support of strategic and tactical airlift deployment and supply operations.[17]

Several elements of this mission statement are critical to the maintenance of a wartime strategic mobility capability, particularly those referring to operation of worldwide bases and air lines of communication. For it is this worldwide system, in addition to the

aircraft fleets, that makes up the present responsive airlift system. Without the aerial port and enroute support capabilities found in MAC's global network, the tremendous capabilities of available aircraft would be unable to meet stringent wartime requirements.

Current Military Airlift Assets

The development of the organization and resources of US military airlift over the years has resulted in the establishment of an impressive in-being capability to support strategic mobility requirements. The Military Airlift Command currently maintains the following active airlift assets: a full-strength complement of 234 unit equipment (UE) C-141 aircraft, 79 UE C-5 Galaxy's, and 234 UE C-130's. Reserve UE airlift assets include 256 C-130's, 64 C-123's and 48 C-7's. This, added to the support base described above, results in a highly credible airlift capability. As impressive as the capabilities of this sizeable air fleet might be, they are not sufficient to meet the airlift requirements generated by our most demanding war plan scenarios.[18]

In an effort to increase the Nation's strategic airlift capability, the United States relies heavily on the civil sector in time of war or national emergency. Military reliance on the civil aviation industry is not a new phenomenon, but has its roots in the Civil Aeronautics Act of 1938 which offers as its primary purpose the "... encouragement and development of an air transport system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, of the Postal Service, and of the National Defense."[19] During the early days of World War II, civil aviation was called upon to accomplish airlift tasks and supply lift capability that exceeded then existing military limits.[20]

In the years immediately following World War II, it became apparent that procedures and policies were required to facilitate rapid civilian augmentation of military airlift capability during wartime or national crisis. In 1948, the Secretary of Defense directed the service secretaries to develop plans for the expansion of airlift capability in time of national crisis. A study submitted by HQ MATS in response to that request became the guideline for the mobilization of civil aviation in time of national need.[21]

The Defense Appropriation Act of 1950 dropped the mobilization concept in favor of a plan by which civil aircraft were directly assigned to the Department of Defense in wartime. In 1952, the Secretaries of Commerce and Defense signed a Memorandum of Understanding that provided for the modification and utilization of civil aircraft for national defense needs. This memorandum was the basis for the Department of Defense Plan for the Civil Reserve Air Fleet.[22]

The Civil Reserve Air Fleet

The 1952 DOD plan for Civil Reserve Air Fleet activation provided for payments to modify commercial aircraft for military use. This plan was the source of all augmentation planning for over 10 years. There were several deficiencies in the plan that were highlighted over the years in numerous studies, papers, and during testimony before the US Congress. Perhaps the most glaring deficiency in the 1952 plan was that it had to be activated in its entirety, a fact that, aside from its obvious economic impacts on the airline industry, made the plan useful only during periods of full mobilization. The economic impact of the "full activation" feature of the plan resulted in delays caused by reluctance on the part of the carriers to agree to call up in situations short of full mobilization. This reluctance was reflected in the fact that after 8 years, only two carriers had signed standby contracts with the Air Force under the Civil Reserve Air Fleet plan.[23] This sad fact was pointed out in a 1960 study titled "The Role of MATS in Peace and War," which contained nine courses of action approved by President Eisenhower that set the stage for major changes in the Civil Reserve Air Fleet (CRAF) program and, more importantly, provided policy guidance to military airlift planners that continues to the present.

These Presidentially approved courses of action constitute, in effect, a statement of national transportation policy intended to provide guidance for the operation and development of MATS airlift resources vis-a-vis commercial carrier operations. The purpose of these courses of action was to spur interest and activity in the CRAF program, and to define the proper role of military airlift assets. MATS was to confine its operations to "hard-core" military requirements, reducing, over time, its routine channel operations,

thereby creating increased activity for the commercial carriers and providing incentive for development of additional civilian cargo capability; the foregoing was to be accomplished with due regard for the necessity of realistic training on a continuing basis as well as the economical peacetime use of airlift necessarily driven by a ready D-Day force. Decrease in organic military capability was to coincide with increases in modern, long-range commercial assets. Preference in contracting for commercial airlift augmentation was to be given to companies who were effectively committed "to the CRAF program and who had demonstrated the willingness and ability to acquire all-cargo aircraft."[24]

These courses of action and the deficiencies in the 1952 CRAF plan that they highlighted led to a complete reexamination of the CRAF program. This reexamination led to a new Memorandum of Understanding between the Secretaries of Defense and Commerce which was signed on 8 August 1963.[25] This memorandum contained procedures for the incremental call-up of civil airline aircraft, including day-to-day augmentation of DOD capability.[26] The basic principles of this memorandum are still in effect today, even though the responsibility for the CRAF was transferred from the Department of Commerce to the Department of Transportation in 1967.

Current CRAF Procedures[27]

Under the concept worked out in the 1963 Memorandum of Understanding, each carrier participating in the CRAF has agreed to provide airlift for use by the military under specific conditions. Currently, 21 airlines are participating in the program. The CRAF carriers operate in four modes: Long-Range International (LRI), Short-Range International (SRI), Domestic, and Alaskan. The prominent mode, LRI, is made up of Boeing 747's, 707's, and McDonald-Douglas DC-10's and DC-8's. All cargo aircraft with a productive range of 2,300 nautical miles are included in the LRI, even though a 3,500-nautical-mile productive range is desired.

Civil Reserve Air Fleet aircraft may be applied against defense requirements in one of three increments or stages. Stages I and II provide rapid civil augmentation without the grave connotation of a national emergency that is normally associated with total CRAF activation.[28] Stage I, which may be activated by

the CINCMAC, is merely an expansion of commercial service already committed to MAC. Stage I involves only LRI-identified aircraft.

Stage II activation is called to meet airlift emergencies not requiring full mobilization. Stage II requires call-up by the Secretary of Defense and involves not only aircraft assigned to LRI and SRI, but also some aircraft committed to domestic and Alaskan modes.

Stage III, which is the full activation of the CRAF, can be initiated by the Secretary of Defense only after the President or Congress has declared a state of national emergency.

Currently, resources committed to the CRAF total 121 cargo-capable aircraft including: 20 Boeing 747's, 25 Boeing 707's, 14 Douglas DC-10's, and 62 cargo-capable DC-8's committed to LRI.[29] These aircraft are capable of producing 10.0 billion-ton-miles of air freight lift.[30] As impressive as that figure may seem, it is not enough, in view of known contingency requirements.

Testimony from the Office of the Joint Chiefs of Staff before the Research and Development Subcommittee of the House Armed Services Committee in April 1976 concluded the following:

(1) The ability of the United States to deploy significant combat forces quickly is important both as a deterrent to potential aggressors and as a positive influence on our allies' attitudes and actions.

(2) Shortfalls in the deployment of cargo exist even using all the resources of the Military Airlift Command and long-range aircraft of the CRAF.

(3) A mix of military and commercial aircraft is essential. The current strategic cargo capability of the combined military and civil airlift force is 34.12 million-ton-miles (MTM) per day. The CRAF passenger segment adds an additional 7.01 MTM's for a total of 41.13 MTM's. About one-half of this total is provided by CRAF.

(4) Finally, rapid deployment capability needs to be enhanced and improved to a point where a balanced deployment in support of NATO can be accomplished in one-half the time presently required if we are to achieve near parity with Warsaw Pact forces.[31]

292-919 O - 79 - 4

Several ongoing and proposed programs designed to achieve this capability enhancement merit examination. These programs, and brief comments concerning their utility, will provide a better insight into possible future airlift postures.

AIRLIFT ENHANCEMENT PROGRAMS

Let us begin with some definitions of terminology, and a clarification of program goals. "Outsize" cargo is that which can be moved only in C-5 aircraft, and with dimensions that exceed 828 inches in length, 117 inches in width, or 105 inches in height. "Oversize" cargo includes those items that can be lifted in the C-141, C-130, and commercial wide-bodied aircraft, but not in DC-8's or Boeing 707's. Oversize items exceed 104 inches in length and 84 inches in width and will not fit a standard pallet. "Bulk" cargo is that which can be palletized and can be carried on any airlift aircraft.

Using a NATO deployment scenario for illustration, we see that of anticipated lift requirements of the first 30 days, approximately 28 percent of the total is outsize equipment, 60 percent is oversize cargo, and the remaining 12 percent consists of bulk cargo.[32] In terms of limiting factors the oversize requirement is the most critical, for while the C-5 fleet could close all outsize requirements in approximately 20 days and, using all CRAF capability, bulk requirements could be met in 10 days, the entire C-141 fleet would require 45 days to close all oversize vehicles and equipment.[33] It is this oversize requirement that is driving current and proposed airlift enhancement efforts. If increases in oversize capabilities cannot be found, then outsize lift will suffer due to the need to divert C-5 capability to the oversize requirement. In any case, without significant enhancement, both the balance and speed of a NATO airlift deployment will be impaired. The task of enhancement programs, then, is to provide for a rapid and balanced deployment. To do this, airlift enhancement efforts must ensure outsize capability at increased levels, and significantly increase both closure rate and total tonnage capability for oversize requirements.

Generally speaking, the United States can improve its combat contribution to NATO during the critical early period in a conflict in two ways: establishment of additional prepositioned

stocks, and improvement in strategic airlift capability.[34] While the first option is perfectly valid and presents numerous benefits upon its adoption, the second alternative, airlift enhancement, will be discussed as it pertains to this study.

There are a number of programs that are clustered under the general rubric of airlift enhancement. These programs include:

(1) Actions to increase potential utilization rates of C-141 and C-5 aircraft by procurement of additional spares.

(2) Plans to increase the lift capacity of the C-141 by "stretching" the fuselage a total of 280 inches, thereby increasing the pallet capacity from 10 to 13 pallet positions. In-flight refueling capability is included in this enhancement program.

(3) Modification of commercial wide-bodied aircraft to install a cargo door and strengthen flooring.

(4) Development and deployment of Advanced Cargo Tanker aircraft.

(5) Use of C-130 aircraft in a strategic deployment role.

A look at each of these programs in greater detail will give a better idea of the benefits to be gained and the costs involved.

Utilization Rate Increases

Efforts to increase the wartime utilization rate of C-141 and C-5 aircraft are designed to achieve the maximum productive flying hours per day. Programmed utilization rates during FY 76 for the C-5 and C-141 were 2.04 and 3.49 hours per day, respectively. Utilization rates currently planned for wartime are 10-hour-per-day surge capability and 8-hour-per-day sustained operation. Long-range Air Force goals, and the target of enhancement planning, are for a surge utilization for the first 45 days of 12.5 hours per day with a planned sustained rate of 10 hours per day. Air Force estimates of increases in lift capability as a result of these planned increases in utilization rates are a total of 32,500 tons of cargo in the first 30 days of a NATO conflict.[35] In order to achieve this planned increase in utilization rate, additional aircraft spares must be purchased and placed in war readiness materials stocks. Additional flight crews and maintenance personnel will also be required

—as many as four flight crews per aircraft. Aircrew increases will be sought through expansion of the Reserve Associate program wherein reserve aircrews are assigned to units that share active duty aircraft and have no assigned aircraft of their own. A total of 280 C-5 and 936 C-141 crews will be required for a 12.5-hour utilization rate. Estimated costs for required increases in spare parts would be over $350 million for the period 1976 to 1980.[36] Fifty-six million dollars were funded for increased spares in FY 76, with an additional $105 million planned through FY 78.[37]

There remain serious questions as to whether a surge rate of 12.5 hours and a sustained rate of 10 hours per day are feasible. The GAO report cited earlier lists several factors that tend to make these goals appear to be unattainable. As pointed out in their comments, Defense officials have testified on numerous occasions before Congress that peacetime utilization rates should be set at no less than 50 percent of what is planned as wartime surge requirements.[38] But a look at recent peacetime utilization rates would indicate a surge capability far lower than the desired 12.5 hours. In addition, experience gained during the Vietnam conflict indicated that fairly long lead times were required to increase utilization rates significantly.

C-141 "Stretch" Modification

The C-141 stretch option involves lengthening the fuselage of the aircraft by inserting two plugs: one forward of the wing, 160 inches in length; the second aft of the wing, 120 inches long. Stretching the fuselage will increase volumetric capacity by more than 30 percent. This option would add virtually no operating or support costs and would actually decrease fuel consumption because of redesign of the wing root fairing.[39] The increase in length would allow an increase in the number of pallets from 10 to 13. In the first 30 days of a NATO scenario, this increase would equate to an increase of 19,000 tons.[40]

The cost of the stretch program, currently estimated at $407 million, is a factor that is, at once, both a positive and negative influence on the decision to stretch or not to stretch.

The C-141 stretch program, by increasing the volumetric capability of the aircraft by 30 percent, if applied to the entire C-141 fleet, would provide a capability increase roughly equivalent to

the purchase of 90 standard C-141's. The cost of such a purchase was estimated, in 1974, at $1.4 billion with an additional $1.35 billion in operating expenses extended over 10 years.[41] In this light the C-141 modification appears to be extremely cost-effective. When compared, however, with other enhancement options and probable capability gains, its cost-effectiveness becomes suspect. Using the estimated 30-day increase in lift capability suggested in congressional testimony,[42] the $407 million cost, over a 10-year period, would equate to a cost of $17 million per 1,000 tons of increase. A proposed modification to the CRAF, estimated to cost $450 million to modify 114 aircraft, with an expected increase in lift of 91,000 tons during a 30-day period, would, computed over a 10-year period, cost $5 million per 1,000-ton increase, apparently far more cost-effective than the C-141 stretch.

Civil Reserve Air Fleet Modification

The proposed CRAF modification is designed to increase oversize cargo lift capability. The modification would provide a cargo door and reinforced flooring on long-range, wide-bodied commercial passenger aircraft. There are two basic plans for CRAF modification. One plan is to modify commercial passenger aircraft by adding a nose-loading door and reinforced treadway area to accommodate rolling stock. A second proposal would install a side-facing cargo door, but would strengthen the entire floor area.[43] United States commercial carriers presently operate approximately 300 wide-bodied aircraft; less than 10 percent, however, are cargo-capable. The remaining aircraft, if modified, would provide a significant increase in oversize cargo capability, a capability that would boost a NATO 30-day airlift by approximately 90,000 tons. Both defense and congressional panels have judged the CRAF modification to be the most cost-effective method of gaining airlift enhancement.[44] Cost of production of the same amount of airlift by organic Air Force means has been estimated to be at least 13 times the cost of the proposed CRAF modifications.

Advanced Tanker Cargo Aircraft (ATCA)

The Advanced Tanker Cargo Aircraft, or ATCA, is one of the major proposals to enhance United States airlift capability. The aircraft, in concept, is designed to accomplish three strategic mobility missions: refueling of C-5 and C-141 strategic airlifters;

refueling of tactical aircraft of the services during deployments; and service as a cargo transporter.[45] The ATCA program is one of the more cost-effective of the airlift enhancement options since the aircraft under consideration for the ATCA role, the Boeing 747 and McDonald-Douglas DC-10, are in-being, off-the-shelf items, representing millions of dollars in "sunk cost" research and development and production tasking that was paid for by the airline industry.

The primary benefit that is derived from the ATCA is the boost in airlift capability that is gained from its refueling potentialities. Illustrative of the efficiency of the ATCA is a comparison with the capabilities of the Air Force's current aerial refueler, the KC-135. It would have required 118 KC-135's to refuel the C-5 fleet that accomplished the 1973 Israeli airlift. Twenty-six ATCA's could have provided the same capability.[46]

Testimony before Congress has indicated that, by the use of the ATCA, $1.6 million would be saved during a typical fighter squadron deployment from the continental United States to Europe.[47] The economic advantages accrued during such a deployment are secondary to the real value of the ATCA in a force projection role, and that is the degree to which it reduces US reliance on foreign bases during a tactical aircraft move. The ability to carry cargo and support equipment as well as provide inflight refueling is an invaluable asset that significantly strengthens US strategic mobility capability.

Perhaps the most salient "selling point" for the ATCA is the fact that it is a known quantity—an off-the-shelf buy. Not only will the system be of proven reliability (the DC-10 has shown dispatch reliability rates approaching 99 percent), but, because of its commercial origins, the ATCA would bring with it an available pool of trained reservists to fly it during crisis periods or during mobilization.[48] Finally, since the aircraft being considered for the ATCA mission are in wide service, there already exists an almost worldwide logistical support base, currently used by the airline companies, that, through proper contractual arrangements, could be available for ATCA support in both peacetime and during emergencies. At the present, spares and service are available at over 100 locations worldwide.[49]

After detailed cost/benefit analysis the Air Force selected the McDonald-Douglas DC-10 for the initial ATCA purchase. Current program levels are set for approximately 20 aircraft, with initial funding for FY 1979 set at $156.8 million. The DOD has requested a proposed FY 1980 authorization of $256.4 million,[50] and expects delivery of the first ATCA in 1981.

C-5 Wing Modification

While not an "enhancement" program in the strictest sense of the word, the C-5 wing modification program is an essential element in the development of a viable strategic mobility capability. The purpose of the C-5 wing modification program is to enable the aircraft to reach its original design life of 30,000 hours. Extensive testing has indicated currently calculated wing fatigue life to be approximately 8,000 hours, less than one-third the design-goal.[51] The modification consists of installation of new center and inner-wing boxes and local work on the outer wing box. The modification is, at the present, one of the highest priority strategic mobility programs, and justifiably so, since the C-5 represents approximately 50 percent of US total military airlift capability in a strategic mode, and is the only airlifter capable of moving outsize equipment such as the main battle tank and self-propelled field artillery pieces. The cost of the C-5 modification program is expected to approximate $1.3 billion for the entire fleet of 77 aircraft.[52] The complete modification schedule stretches over 5 years from February 1982 until July 1987. Fiscal Year 1979 funding for engineering and development is proposed at $37 million with a requested authorization for FY 1980 of $105.1 million.[53]

Use of C-130's in Strategic Role

Using C-130 aircraft to augment strategic lift capability is not a new idea, nor will it, as would some of the more exotic enhancement proposals, result in an aircraft that is larger, faster, or of greater range. This proposal is, however, the result of an enlightened approach toward the efficient utilization of airlift resources. A major step toward this enlightenment was the consolidation of airlift resources under the Military Airlift Command as a true single manager for airlift. In the past there has been a rather sharp dichotomy between "strategic" and "tactical"

airlift, with a corresponding tendency for the managers of each mode to jealously guard their perceived roles and missions. Consolidation resulted in airlift planners being given the opportunity to actively seek innovative ways to get maximum efficiency out of the total airlift resources to a degree previously not possible.

The realization that tactical, intratheater airlift resources would not be required in maximum numbers until some point subsequent to D-day led to plans to use the C-130 in the strategic role. Until intratheater requirements occur, a portion of the theater resources would be available to augment the strategic forces. The increase in lift capability to NATO during the first 30 days due to C-130 augmentation is approximately 11,000 tons.[54]

Enhancement Summary

Current airlift enhancement efforts are being concentrated in three main areas: more efficient use of existing resources, modification to existing resources to increase their capability and life expectancy, and more effective and productive utilization of civilian airlift capabilities. These enhancements show promise of significantly increasing the US strategic mobility capability, particularly during the critical early period. Estimates of the effects of enhancement programs on lift capabilities during the first 30 days of a NATO deployment indicate they would reduce by 50 percent the time required to lift a given amount of equipment during the early period of a NATO deployment; or, in other terms, such programs could double the amount of tonnage lifted in a fixed time period.[55]

Obviously, enhancement programs that promise impressive increases in capability are not without cost. A report on strategic airlift by the Comptroller General cited the cost of enhancement programs by the Defense Department as being in excess of $3.5 billion.[56] These costs, however, have been subjected to intense cost-benefit analysis and proposed enhancements have all been evaluated in that light.

The GAO report criticized not only the costs of enhancement programs but also some of their basic underlying assumptions. For example, in evaluating the proposal to increase airlift utilization

rates to 10-hour-per-day sustained and 12.5-hour-per-day surge, several questionable assumptions are present. The computation of lift increases derived from increased utilization rates assumes that 100 percent of the UE aircraft are available and producing at a 10-hour sustained utilization rate over the entire 30-day period. This includes 70 C-5's and 234 C-141's of the active UE force and 7 C-5 and 37 C-141 reserve aircraft assigned as NOA and training aircraft. This assumption is hardly realistic, both in terms of historical performance data for the C-5 and C-141 and in view of proposed modifications to both aircraft that would make significant numbers of them unavailable for extended periods. Additionally, Air Force testimony before Congress showed that during the Vietnam war, MAC required over 9 months under their Combat Pacer Program to achieve an 8.0-hour-per-day utilization rate based on a 4.0 crew ratio and a 48-hour work week that required additional manpower (aircrews, maintenance and aerial ports).[57] While, under wartime conditions, many aspects of routine maintenance and limitations placed on workloads for ground and crew personnel are expected to be waived, a more realistic assumption than 100 percent availability should be made.

The proposed stretch and refueling retrofit of the C-141 has received two main criticisms. First, the increases in lift capability appear subject to interpretation from the viewpoint of volumetric increase versus tonnage increase. The GAO concluded that increases over a 30-day period may be as little as 4,700 tons instead of the 16,500-ton Air Force estimate. Conversely, the 1976 Air Force congressional testimony reflected a 20,000 ton/month improvement. Such a large difference obviously affects any cost-effectiveness evaluation of the proposal. Second, since the service lift of the C-141 is estimated at 30,000 hours and some aircraft in the fleet exceed 20,000 hours, the long-term benefit of this proposal is questionable.[58] However, the Air Force now officially certifies the service life of the modified C-141 to be in excess of 45,000 hours.

The CRAF modifications appear to have considerable merit from a cost-effective viewpoint, but Congress has questioned the proposal on the basis of legal responsibilities and possible cost-sharing procedures, and to date has been slow to accept modification proposals. The GAO recommended further study on

several issues relative to fiscal responsibility and operational considerations involving the use of civilian crew members in combat zones.[59]

ENDNOTES

1. Two interesting accounts of the early days of military air transportation are: Stanley M. Ulanoff, *MATS: The Story of the Military Air Transport Service* (New York: Franklin Watts, Inc., 1964); and Clayton Knight, *Lifeline in the Sky: The Story of MATS* (New York: William Morrow & Co., 1957).

2. Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force 1907-1964* (Maxwell AFB, Alabama: Air University, 1971), p. 93.

3. Reginald M. Cleveland, *Air Transport at War* (New York: Harper and Bros., 1949), p. 13.

4. Futrell, *Ideas, Concepts, Doctrine*, p. 93.

5. US, Department of the Air Force, *The Story of MATS* (Washington, DC: Government Printing Office, 1951), p. 6.

6. *National Security Act of 1947*, 61 Stat. 500, Sec 202 (a) (3).

7. James Forrestal, *Memorandum: Organization and Mission of the Military Air Transport Service (MATS)*, 3 May 1948.

8. Ibid.

9. US, Department of Defense, *DOD Directive 5160.1, Single Manager Assignment for Airlift Services*, 7 December 1956.

10. US, Congress, House, Committee on Government Operations, *Military Air Transportation—1963*, Tenth Report by the Committee on Government Operations (Washington, DC: Government Printing Office, 1963), p. 12.

11. US, Congress, House, Committee on Armed Services, *The Posture of Military Airlift, Hearings before the Research and Development Subcommittee*, 94th Cong., 1st sess., November 1975 (Washington, DC: Government Printing Office, 1975), p. 10.

12. US, Congress, House, Committee on Armed Services, *The Posture of Military Airlift, A Report by the Research and Development Subcommittee,* 94th Cong., 2d sess., 9 April 1976 (Washington, DC: Government Printing Office, 1976), p. 13.

13. Cleveland, *Air Transport At War,* p. 48.

14. Ibid., p. 154.

15. US, Comptroller General of the United States, *Airlift Operations of the Military Airlift Command During the 1973 Middle East War,* General Accounting Office Report LCD 75-204, 16 April 1975 (Washington, DC: General Accounting Office, 1975), p. 10.

16. US, Department of the Air Force, *Air Force Fact Sheet 77-35,* p. 1.

17. US, Congress, House, *The Posture of Military Airlift, Hearings,* p. 11.

18. General Paul K. Carlton, "Remarks in the NDTA Forum," Speech presented to the NDTA Forum, Honolulu, Hawaii, 6 October 1975, cited in US, Congress, House, *The Posture of Military Airlift, Hearings,* p. 535.

19. *Civil Aeronautics Act of 1938,* 51 Stat. 980, Sec. 1 (a).

20. For a detailed account of the support of military operations gained from US civil aviation during the early days of World War II, see Cleveland, *Air Transport at War.*

21. US, Department of the Air Force, *Military Air Transport Service, General Policies for Mobilization of the Civil Air Carrier Industry* (Scott AFB, Ill.: HQ MATS, 1948).

22. US, Department of Defense, *The Department of Defense Plan for the Civil Reserve Air Fleet* (Washington, DC: Government Printing Office, 10 March 1952).

23. US, Department of Defense, Military Air Transport Service, *The Role of Military Air Transport Service in Peace and War* (Washington, DC: Government Printing Office, 1960), p. 19.

24. Ibid., pp. 5-6.

25. *Memorandum of Understanding By and Between the Secretary of Defense and the Secretary of Commerce with Respect to the Civil Reserve Air Fleet Program,* 8 August 1963.

26. Ibid., p. 2.

27. Information for this section was derived, for the most part, from a statement of the Military Airlift Command, regarding the CRAF program that appeared in *Defense Transportation Journal* 34 (August 1977): 50-56.

28. US, Congress, House, *The Posture of Military Airlift, A Report,* p. 32.

29. US, Congress, House, *The Posture of Military Airlift, Hearings,* p. 54.

30. Ibid., p. 9.

31. US, Congress, House, *The Posture of Military Airlift, A Report,* p. 5.

32. US, Congress, House, *The Posture of Military Airlift, Hearings,* p. 241.

33. Ibid.

34. Donald H. Rumsfeld, *FY 1978 Annual Report of the Secretary of Defense* (Washington, DC: Government Printing Office, 1977), p. 229.

35. US, Comptroller General, *Information on the Requirement for Strategic Airlift*, GAO Report No. PSAD-76-148 (Washington, DC: General Accounting Office, 1976), p. 7.

36. Ibid., p. 9.

37. Rumsfeld, *FY 1978 Annual Report*, p. 232.

38. See, for example, the testimony of the Honorable Philip LeBoutillier, Deputy Assistant Secretary of Defense (Supply and Logistics) before the House Committee on Government Operations, 9 May 1960. See also, *Military Air Transportation, Hearings before a Subcommittee of the House Committee on Government Operations*, 86th Cong., 2d sess., (Washington, DC: Government Printing Office, 1960), p. 17.

39. US, Department of the Air Force, "Report to the 95th Congress," Presentation to the Committee on Armed Services, House of Representatives, by Honorable John J. Martin and General David C. Jones, March 1977, p. 31.

40. US, Congress, House, *The Posture of Military Airlift, A Report,* p. 19.

41. Major General Paul F. Patch, "Airlift Enhancement: Issues and Answers," *Translog* 5 (June 1974): 4.

42. This stated increase in capability has been seriously questioned. For example, see US, Comptroller General, *Information on the Requirement for Strategic Airlift*, p. 12, which computes the first 30-day increase at 4,700 tons vice 19,000 tons.

43. Paul K. Carlton, "Military Airlift Commander Calls for Dynamic Development of All Cargo Aircraft," *Defense Transportation Journal* 31 (December 1975): 21.

44. US, Congress, House, *The Posture of Military Airlift, A Report*, p. 21.

45. Edgar Ulsamer, "ATCA—Key to Global Mobility," *Air Force* 59 (April 1976): 24.

46. Ibid.

47. US, Congress, House, *The Posture of Military Airlift, A Report*, p. 21.

48. Ulsamer, "ATCA-Key to Global Mobility," p. 24.

49. Ibid.

50. Harold Brown, *Department of Defense Annual Report, FY 1979* (Washington, DC: Department of Defense, 2 February 1978), p. 236.

51. L. O. Kitchen, "Statement of L. O. Kitchen, President, Lockheed Corp.," presented before the Research and Development Subcommittee, 94th Cong., 1st sess., cited in *The Posture of Military Airlift, Hearings*, p. 352.

52. Brown, *FY 1979 Annual Report*, p. 229.

53. Ibid., p. 232.

54. US, Congress, House, *The Posture of Military Airlift, A Report*, p. 247.

55. For a more detailed explanation of enhancement effects, see the testimony of Brigadier General Jasper A. Welch, Jr., Assistant Chief of Staff, Studies, and Analysis, HQ USAF, recorded in *The Posture of Military Airlift, Hearings*, pp. 244-275.

56. US, Comptroller General, *Information on the Requirement for Strategic Airlift*, p. ii.

57. US, Congress, House, Committee on Armed Services, *Military Airlift, Hearings before the Subcommittee on Military Airlift*, 91st Cong., 2d sess., 1970 (Washington, DC: Government Printing Office, 1970), p. 6260.

58. US, Comptroller General, *Requirement for Strategic Airlift*, p. 14.

59. Ibid., p. 16.

CHAPTER IV
LAND TRANSPORTATION AND TRAFFIC MANAGEMENT

An account of the development of land transportation capability as it pertains to defense transportation cannot be as clear-cut as are the descriptions of the evolution of air and sea transport resources. While the development of land transportation assets, such as railroads, inland waterways, and highways, are important in their impact on national security capabilities, it is the question of the evolution of traffic management in the Department of Defense that is of greater interest to the objectives of this study. The primary reason for this direction of emphasis is that Military Traffic Management Command (MTMC), a single manager agency of the Department of the Army, does not—unlike MAC or MSC—operate a major organic lift asset, such as the MAC airlift fleet or the MSC nucleus fleet of ships. The only lift asset, of note, under the control of MTMC is the Defense Freight Railway Interchange Fleet, which is made up of some 3,600 freight cars.[1] The prime contribution of MTMC is common user traffic management support in the DOD.

Before proceeding with a discussion of the history of the development of traffic management in the DOD, clarification of the term is in order. In reviewing the literature concerning traffic management, and overall management of transportation functions within the Defense Department, one is immediately faced with the difficulty of unraveling the confusion surrounding the various uses of the term "traffic management." This term is used both specifically, to refer to a limited responsibility for managing the use of commercial augmentation of military lift assets, as well as generally, to refer to the management of defense transportation across its entire spectrum. As defined by the Joint Chiefs of Staff, "traffic management" is "the direction, control, and supervision of all functions incident to the procurement and use of freight and passenger transportation services."[2] The definition of traffic management provided in the DOD Directive that outlines the responsibilities of MTMC—the DOD Single Manager for military traffic, land transportation, and common user ocean terminals—is even more definitive. According to this directive, traffic management is "the direction, control, and supervision of all functions incident to the

effective and economical procurement and use of freight and passenger transportation service from *commercial for-hire* transportation companies."[3] (emphasis added)

There is a clear distinction between definitions such as these, and the term "traffic management" as used in the context of the management of the total transportation system that serves the DOD. Quite often the term "traffic management" is used in a broader sense, and is intended to describe considerably more responsibility than the management of commercial augmentation. Frequently, the term is used to describe those functions that are required to provide overall management and control of the transportation system. It is in this broader context that the term is used in this paper. To reduce confusion, discussions of the larger question of centralization and unification of transportation functions in the DOD will use the term "transportation management," to clearly indicate that the intent is to discuss management of the movement of passengers and cargo through the Defense Transportation System, whatever the mode, civilian-operated or organic to military units. Some confusion will persist, however, as the terms "traffic management" and "transportation management" have been used interchangeably over the years.

This chapter will deal with those actions that led to the creation of the Military Traffic Management Command. A later chapter will deal with the issue of unified transportation management and the issues that have historically surrounded this question.

BACKGROUND AND DEVELOPMENT

The development of an organization responsible for land transportation functions was inexorably intertwined with the question of service unification after the end of World War II. Very little was accomplished after the war until the 1949-1950 time frame due to service resistance to unification efforts. Following the assignment of the responsibility for sea transportation to MSTS in 1950, the stage was set for similar moves in the land transportation area. While it was assumed that the Army, because of its mission, and preponderant interest in land transportation, would be given responsibility for all land transport, the issue was not that easily solved. The services felt that control of the movement of their personnel and supplies was integral to their logistic responsibilities.[4]

One of the first steps taken to strengthen military land transportation management was the establishment of a Central Military Land Traffic Office (CMLTO) within the Office of the Army Chief of Transportation. The existence of this office was short-lived, however, because of disagreements over functions, staffing, and organization, and the fact that only limited responsibilities had been included in its charter.

The Korean crisis continued to highlight the problems surrounding defense traffic management, and in 1952, another attempt at bringing the various elements together in an integrated structure was made with the establishment of the Joint Land Transportation Agency (JLTA), within the Office of the Army Chief of Transportation. The impact of the organization was limited because it was concerned mainly with planning, and had little effect on operational issues and procedures. Little else was accomplished in the evolution of land transportation management until 1956, when Defense Secretary Charles Wilson extended the Single Manager Plan to common-use items and common-service activities.

In May 1956 the Secretary of the Army was designated as the single manager for all military traffic in the continental United States, and the Military Traffic Management Agency (MTMA) was established to carry out his single manager responsibilities. Shortly after the creation of the Defense Supply Agency in 1961, the MTMA was removed from the Department of the Army, placed in the new agency, and renamed the Defense Traffic Management Service (DTMS). This arrangement was again short-lived, however, and in November 1964, following the completion of a study of the CONUS air and ocean terminal system conducted by the Joint Chiefs of Staff,[5] the Secretary of the Army was given broader responsibility for military transportation management and was designated the single manager for military traffic, land transportation, and common-user ocean terminals.[6] The Secretary, in turn, created the Military Traffic Management and Terminal Service (MTMTS), receiving functions and resources from both the Defense Supply Agency and the military services. Effective 31 July 1974, MTMTS was redesignated the Military Traffic Management Command, aligning it more closely with the designation of the other two single manager agents, and more accurately describing the primary functions performed within the command.

292-919 O - 79 - 5

MILITARY TRAFFIC MANAGEMENT COMMAND

Mission and Organization

The Military Traffic Management Command (MTMC) is organized as a major field command of the Department of the Army. It is a jointly staffed organization with its headquarters located in Falls Church, Virginia, in the Metropolitan Washington, DC, area. This relatively small command has a personnel strength of approximately 750 military and 3,800 civilian employees.[7] The command operates through four major subordinate commands: MTMC Eastern Area at Bayonne, New Jersey; MTMC Western Area at Oakland, California; MTMC Transportation Terminal Group, Europe, at Rotterdam, the Netherlands; and MTMC Transportation Engineering Agency, located at Newport News, Virginia.

The MTMC is the Single Manager Operating Agency designated to carry out the responsibilities of the Secretary of the Army for military traffic, land transportation, and common use ocean terminal service. As such, its mission is to:

> . . . support the Department of Defense (DOD) with CONUS transportation services including traffic management, transportation engineering, operation of common-user ocean terminals, and specified worldwide traffic management responsibilities for the moving or storage of personal property.[8]

In order to accomplish this mission, MTMC has been assigned responsibility for a wide variety of functions. The basic responsibilities of the command can be categorized into five main areas: traffic management, ocean terminal operation, transportation management information systems, transportation planning, and transportation engineering. A brief discussion of each of these areas with reference to specific functions performed by MTMC will better serve to illustrate the role of MTMC in defense transportation.

Traffic Management

The MTMC Charter defines military traffic management as:

> . . . the direction, control and supervision of all functions incident to the effective and economical procurement and use of freight and passenger

transportation service from commercial for-hire transportation companies (including rail, highway, air, inland waterway, coastwise and intercoastal carriers).[9]

This definition, which has been in the MTMC Charter since 1956, is inadequate in its description of this vital function of defense transportation, for it identifies only a segment of the transportation system, the commercial segment, as being impacted by defense transportation management. Obviously, the "effective and economical" use of military transportation assets is equally important to the defense traffic manager. In fact, the same charter document lists the purposes and objectives of the creation of MTMC:

1. To eliminate duplication and overlapping of effort between and among Military Departments, Defense Agencies, and other components of DOD.

2. To improve the effectiveness and economy of these operations throughout the DOD.

3. To ensure that the approved emergency and wartime requirements of DOD are met.[10]

These three goals are summarized in an often-quoted statement about the MTMC mission:

> The "what," "where," and "when" of military movements lie outside the purview of the MTMC mission. These determinations remain with the shippers and their sponsoring commands. But the "how" of military transportation and the control necessary to insure the "when" are the central substance of the MTMC mission. This is the core of military traffic management.[11]

As DOD's Traffic Manager, MTMC controls the movement of Army's passengers and cargo into air terminals, the movement of Air Force as well as Army passengers into and through ocean terminals, and the movement of all cargo into and through the ocean terminals. The MTMC also manages the worldwide moving and storage of all DOD personal property shipments, a program which during Fiscal Year 1977 involved $726 million in transportation and storage costs.[12] Additionally, the command is responsible for controlling the operations of military-owned railway rolling stock

registered for interchange service other than that permanently assigned to intrabase and intraplant operation, including supply accountability and maintenance of the Defense Freight Railway Interchange Fleet (DFRIF) of approximately 3,600 rail cars.[13] The DFRIF is comprised of rolling stock used by the services within CONUS and Alaska railroad interchange service in support of DOD movement requirements. New DFRIF equipment is procured to supplement commercial resources when either a particular type of car is not available or commercial sources are unable to meet DOD needs in the numbers or at the time required.[14]

Other major functions associated with MTMC's traffic management responsibilities include: negotiating with carriers regarding movements within the CONUS; selection of the most efficient and economical mode; determining freight classification, routing traffic and/or providing guidance to other agencies involved in traffic routing; developing and operating systems designed to monitor enroute traffic; preparing requirements forecasts and reconciling them with lift capability; and conducting analytical studies of various aspects of defense transportation operations.[15]

That MTMC is effective in its role of traffic management is a fact that can be seen in both the magnitude of the task it performs and the economies it realizes through its operations. During 1977 MTMC arranged 4.5 million CONUS passenger movements at a cost of $267 million, and controlled the movement of 9.3 million short tons of cargo between CONUS installations at a cost of $326 million.[16] During this same period, MTMC reported cost avoidance savings of over $47 million resulting from negotiation actions, transit utilization, group passenger movements, volume movement of household goods, transportation engineering, and direct intervention.[17]

Ocean Terminal Operation

A second major element of the MTMC mission is the operation of assigned military ocean terminals and terminal units, both in the United States and overseas. Responsibility for operation of CONUS common-user ocean terminals was given to MTMC in the 1967 charter. Under that authority, MTMC owns and operates three common-user CONUS terminals at Oakland, California; Bayonne,

New Jersey; and the Sunny Point Ammunition Ocean Terminal at Southport, South Carolina. The MTMC controls DOD cargo movement through certain commercial ocean terminals designated as outports. There are currently seven CONUS outports in operation.[18]

The MTMC terminal operations overseas have, until recently, been limited to US Army Transportation Terminal Units (TTU's) at certain overseas locations formerly served by the Director of Transportation, Office of the Deputy Chief of Staff (Logistics), as special foreign activities.[19] These terminal units provide terminal management and other passenger and cargo-handling services principally in support of US Air Force and other government agencies such as Military Assistance Advisory Groups and US Embassies. Current TTU's are located in Greece, Spain, the Azores, and Turkey.

In July 1976, MTMC responsibilities for overseas common-user ocean terminal operation increased significantly. At that time MTMC was assigned the responsibility for operation of common-user ocean terminals in Northern and Central Europe. The terminals are located in the Federal Republic of Germany, Belgium, the Netherlands, Portugal, and Great Britain.[20] All of these terminals are assigned to the MTMC Transportation Terminal Group, Europe, a new major subcommand formerly organized under US Army, Europe (USAREUR). October 1976 saw a further increase in MTMC overseas terminal responsibilities with the assumption of the ocean terminal at Leghorn, Italy. The latest terminal gains by MTMC were responsibility for military ocean terminal operations on Okinawa in October 1977, and at Yokohama, Japan, in February 1978.

The rationale behind the transfer of these overseas terminal responsibilities to MTMC was that it would improve the overall logistical support network within the DOD. Cited benefits gained by the transfer include the establishment of a more visible audit trail of DOD shipments, closer interface between traffic managers and theater consignees, and better documentation and shipment information which results in increased responsiveness to queries from shipper services.[21]

The command assumed oversea terminal operational responsibilities at a time when it phased down operations at the military ocean terminals at Bayonne and Oakland.

As a part of a program that was begun in 1972, MTMC realigned much of the workload of the Oakland and Bayonne terminals to commercial facilities. The incentive for this realignment has been the large increase in containerization of DOD export cargo which has resulted in significant underutilization of the Bayonne and Oakland terminals. The terminals, in effect, have been outmoded by transportation distribution technology. Realignment plans include handling the small remaining break-bulk cargo at the commercial container facilities.[22] This realignment should result in significant savings as DOD cargoes are processed through high-volume commercial facilities, several of which are already designated as MTMC output facilities.

Transportation Management Information Systems

Transportation information data support is a major MTMC mission. The MTMC charter assigns the command the responsibility for developing, establishing, and operating an integrated transportation information data system to support its mission.[23] Maximum use of automated information systems is a main objective of the command.

The program that was developed by MTMC to provide automated support for all facets of their traffic management and terminal operation mission is AUTOSTRAD, or Automated System for Transportation Data. AUTOSTRAD provides the basis for the development of new transportation management and terminal operations techniques, the development and design of new transportation systems, the phased integration of new systems with existing systems, and the updating and standardization of ADP equipment and programs.[24]

AUTOSTRAD is divided into six main functional systems which roughly correspond to elements of the MTMC mission. These systems include:

1. The Command Administrative Data System (COADS) assists MTMC support staff elements with analytical support and management information.

2. The Freight Automated System for Traffic Management (FAST) aids in managing movement of DOD cargo by interfacing with information systems of terminals, shipping activities, other DOD agencies, and the transportation industry.
3. The Mobility Operations Data System (MODS) provides information for deployment monitoring, mobility planning, and use in JCS and DA plans, studies, and analyses.
4. The Passenger Traffic Management System (PASTRAM) provides operational and analytical support to the passenger traffic manager in selecting and procuring commercial transportation for DOD civilian and military personnel moving within the CONUS, and or the through movement of Army passengers to and between overseas theaters.
5. The Terminal Management System (TERMS) assists in controlling the movement of surface export cargo. The system includes major documentation and procedural subsystems at each Area Water Terminal Clearance Authority and at each of the ocean terminals.
6. The Worldwide Household Goods Information System for Traffic Management (WHIST) provides management support for the DOD Personal Property Moving and Storage Program. Information from this system is available both to installation transportation officers who monitor the movement of household goods and baggage, and to transportation managers concerned with carrier selection and performance monitoring.[25]

While the use of the AUTOSTRAD networks results in substantial savings, the greatest benefit it provides to defense transportation managers is improved operational efficiency and performance.

Transportation Planning

One of the critical elements in the development of national security strategy is the correlation of transportation capability with transportation requirements. This element can range in character

from long-range forecasting of transportation requirements to specific planning for a particular operational requirement.

The MTMC is directly involved in this transportation planning process. The command is required to provide transportation planning in three basic functional areas: emergency planning for wartime and other contingencies, mobility planning support for operational plans, and analysis of operational activities. Specific planning roles assigned to MTMC are:

> (1) Provide transportation planning support to the JCS, the Unified and Specified Commands, the military services and other DOD agencies in support of JCS plans.
>
> (2) Develop plans to assure the efficient use of land transportation resources made available to DOD during mobilization or other emergency conditions.
>
> (3) Prescribe, under JCS guidance, the methods and formats to be used by DOD components in developing transportation requirements and evaluate the validity of the requirements specified.[26]

The MTMC emergency planning function is geared toward ensuring the effective use of CONUS land transportation assets during emergency conditions, supporting Army emergency plans, and insuring the readiness of the command. The MTMC Basic Emergency Plan is the primary vehicle for ensuring MTMC responsiveness during emergency periods. The plan supports the *National Plan for Emergency Preparedness*, the *Joint Strategic* Capabilities Plan, and plans of various DOD components.[27] It also provides guidance to DOD elements on the execution of traffic management functions and the operation of MTMC under emergency conditions.

A second element of MTMC planning responsibility is mobility planning. The MTMC is responsible for planning the intra-CONUS movement of Air Force deployments, as well as the reception of supplies, equipment, and troops deploying in support of CINCEUR operations.

The Mobility Analysis and Planning System (MAPS) is the operational movement planning system that supports the MTMC mobility planning function. This system provides ADP capability to

aid in scheduling equipment and personnel movement, integrating port workload computations, and analyzing planned movements through all phases of the operation.

A third major planning function conducted by MTMC is analyzing the adequacy of existing transportation systems, and advising OJCS and other DOD components of inadequacies in those systems. MTMC routinely conducts studies regarding the impact of DOD requirements on CONUS transportation resources, during both peacetime and emergency conditions. Activities conducted in this function include: command post exercises, deployment analysis studies, terminal capability evaluations, and specific exercises designed to evaluate specific operations and procedures within the transportation system.

Transportation Engineering

The final main area of MTMC responsibility is transportation engineering. Transportation engineering is concerned with the design, construction, and operation of the transportation system in two areas: the analysis of the physical plant to insure future adequacy, and development of appropriate operating procedures to insure the efficient and effective use of those facilities. The transportation engineering function includes a wide range of activities, from the supervision and administration of DOD activities regarding the Highways for National Defense Program, providing transportation and traffic engineering services to DOD components, to the administration of the DOD Engineering for Transportability Programs.[28]

The Transportation Engineering Agency (TEA) is charged with the mission of conducting traffic engineering studies and providing consulting services for DOD, administering the Department of Army portion of the DOD Engineering for Transportability Program, providing DOD guidance for land transportation, and performing functional analyses of transportation systems.[29]

Two important programs of the TEA are the Highways for National Defense and Railroads for National Defense. Under the Highways for National Defense Program, TEA conducts surveys of principal highways and connecting roads to determine their adequacy for national defense. Problems identified in the highway system are coordinated with appropriate governmental agencies.

The Railroads for National Defense Program was established in 1975 to assure that the Nation's rail system remained capable of handling national defense needs. Under this program, MTMC has identified a railroad corridor network that is strategically important to defense needs. The agency also reviewed the railroad system that resulted from the Regional Rail Reorganization Act of 1973 and the Railroad Revitalization and Regulatory Reform Act of 1976, and provided comments to the ICC regarding their findings.[30]

ENDNOTES

1. "MTMC at 13" *Translog* 9 (February 1978): 6.

2. US, Department of Defense, Joint Chiefs of Staff, *JCS Publication 1, Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, 1974), p. 338.

3. US, Department of Defense, *DOD Directive 5160.53, Single Manager Assignment for Military Traffic, Land Transportation, and Common-User Terminals* (Washington, DC: Assistant Secretary of Defense (I&L), 24 March 1967), p. 3.

4. For detailed historical perspectives, see US, Department of the Army, *MTMA, Single Managership of CONUS Traffic, TC in the Current National Emergency* (Washington, DC: Office of the Chief of Transportation, 1956); and *MTMA's First Year, FY 1957: Establishing the Operational Base, TC in the Current National Emergency: The Post Korean Experience* (Washington, DC: Office of the Chief of Transportation, 1957).

5. US, Department of Defense, Office of the Joint Chiefs of Staff, *Study of CONUS Air and Ocean Terminal System (U)*, Washington, DC, 1964.

6. US, Department of Defense, *DOD Directive 5160.53*, 24 June 1965.

7. US, Department of the Army, Military Traffic Command, *DOD's Traffic Manager*, Washington, DC, 1977, p. 8.

8. US, Department of the Army, *Organization, Mission, and Functions, Military Traffic Management Command*, MTMC Regulation 10-2, 1 September 1977, p. 7.

9. US, Department of Defense, *DOD Directive 5160.53*, 24 March 1967, p.3.

10. Ibid., p. 2.

11. Paul H. Riley, "TOA Operations—Relationship to Total Force Concept," a presentation to the Worldwide Logistics Conference, quoted in US, Department of Defense, Joint Chiefs of Staff, *Report on Worldwide Logistics Conference, 22-24 April 1975*, p. 190.

12. "MTMC at 13," p. 7.

13. *DOD Directive 5160.53*, 24 March 1967, Change 5, 1 January 1974, p. 6.

14. US, Department of Defense, Military Traffic Management Command, *Annual Historical Review (RCS CHIS-6 (R2)): 1 July 1975 to 30 September 1976,* p. 164.

15. *DOD Directive 5160.53*, 24 March 1967, pp. 11-15.

16. "MTMC at 13," p. 7.

17. US, Department of Defense, Military Traffic Management Command, *MTMC Worldwide Traffic Management Summary (RCS 493 (O) (I&L)),* MTMC/MT-CMP, Washington, DC, 15 December 1977, p. 7.

18. "Who's Who at MTMC Units," *The MTMC Expediter* 1 (January 1978): 3.

19. Arnold E. Ostrom, *Defense Transportation: The Military Traffic Management and Terminal Service*, Industrial College of the Armed Forces Monograph Series (Washington, DC: Industrial College of the Armed Forces, 1967), p. 28.

20. *MTMC Annual Historical Review*, 1976, p. 259.

21. "MTMC Gains Okinawa Terminals," *Translog* 8 (October 1977): 15.

22. Major General H. R. Del Mar, USA, "Streamlining for Tomorrow," *Defense Management Journal* 11 (April 1975): 33.

23. *DOD Directive 5160.53*, 24 March 1967, p. 4.

24. *MTMC Annual Historical Review*, 1976, p. 72.

25. Ibid., p. 73.

26. *DOD Directive 5160.53*, 24 March 1967, paras. VA, VD, and VT, pp. 4-6.

27. US, Department of Defense, Military Traffic Management Command, *Annual Historical Review*, 1976, p. 324.

28. Ibid., p. 379.

29. Military Traffic Management Command Transportation Engineering Agency, *An Introduction to MTMCTEA* (Newport News, VA: Transportation Engineering Agency, 1977), p. 5.

30. US, Department of Defense, Military Traffic Management Command, *Annual Historical Review*, 1976, p. 379.

CHAPTER V

EFFORTS TO IMPROVE DEFENSE TRANSPORTATION MANAGEMENT[1]

The experience of World War II generated the belief that military transportation functions were poorly organized, overlapping, and because of duplication in manpower and transportation assets, overly expensive. However, successful cooperative arrangements between the services and among the Allies had demonstrated the success that was possible through unified action. Even while the war was still going on, Congress began to examine the structure of the Military Establishment in an effort to develop the optimum postwar organization. A major element of this organizational review was an analysis of the methods and organizational relationships by which defense transportation needs were met. The House Select Committee of Post-War Military Policy, meeting in 1944, considered legislation which, if passed, would have created a unified armed service. Part of the testimony before the select committee concerned integration of the military transportation resources and development of centralized defense traffic management.[2]

In its 1944 report the select committee recommended the establishment of a unified armed service. Due in great part to vigorous opposition by the Navy and Air Force, the recommendations for unification did not survive. Unification, of a sort, was achieved, however, in 1947 with the passage of the National Security Act.

MOVES TOWARD CONSOLIDATION: 1947-1970

The National Security Act of 1947

The National Security Act of 1947 made it clear that Congress did not intend to merge the three services into a single organization:

> It is the intent of Congress to provide a comprehensive program for the future security of the United States; to provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the government relating to national security; to provide three military departments for the

> operation and administration of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force, with their assigned combat and service components; to provide for their authoritative coordination and unified direction under civilian control, but not to merge them; to provide for the effective strategic direction of the Armed Forces and for their operation under unified control and for their integration into an effective team of land, naval and air forces.[3]

At the same time, however, that Congress declared its intent to retain the separate services, it also directed the Secretary of Defense to take necessary action to ". . . eliminate unnecessary duplication or overlapping in the field of procurement supply, transportation, storage, health, and research."[4] This congressional position of retaining separate military services, but consolidating functions and services as much as possible, led to a concept of interdependence of transportation functions that eventually evolved into our present single manager concept.

The First Hoover Commission

In 1949 the first Commission on Organization of the Executive Branch of Government, chaired by former President Herbert Hoover, was sharply critical of the lack of coordinated activity within the Federal supply and transportation functions. This group also spoke out for centralized control of the transportation resources of the Government, and recommended that the Nation's traffic management capability be organized as a major governmental function. Control of military traffic was to be left to a central agency under the National Military Establishment, rather than to an overall government agency. Centralization of military traffic management was expected to result in several benefits, to include: the elimination of duplication of traffic files between the services, centralization of rate information and rate negotiation authority, and the establishment of equitable methods of distributing traffic among the carriers.[5] The Hoover Commission also recommended that the National Security Act of 1947 be amended to empower the Secretary of Defense to direct the Munitions Board, under which the consolidated military traffic

management function was to be placed, to "integrate and unify policies, rules . . . and procedures with respect to procurement and traffic operations."[6]

The sweeping recommendations of the Hoover Commission led to the enactment of Public Law 81-152, The Federal Property and Administrative Services Act of 1949. This act established the General Services Administration (GSA), giving it the power to establish policy and methods relative to the procurement of transportation and the exercise of traffic management. This act also, however, gave the Secretary of Defense the prerogative of exempting the national security establishment from control under the act at any time he determined such exemption to be in the "best interest of national security."[7]

As a part of efforts to clarify the delineation of responsibilities between the GSA and the Department of Defense in managing military traffic, the two agencies executed a Statement of Areas of Understanding, which stipulated that the DOD should provide some traffic management functions for itself while other functions would be jointly performed.[8] The statement was intended to serve as a general guideline for cooperation between GSA and DOD, but it failed to adequately address many of the issues surrounding DOD transportation activities. Because of this failure, the Secretary of Defense exercised his prerogative and, in October 1954, exempted DOD traffic from GSA control.[9]

The Second Hoover Commission

The Second Hoover Commission, established in July 1953, went far deeper into defense transportation issues than had previous studies, and therefore dealt with defense-related issues with greater substance. The Commission found that the Defense Department needed a "new look" in the form of strengthened central direction due to numerous factors which, taken together, indicated a "general lack of modern traffic management in the Federal Government."[10] The Commission recommended that the Secretary of Defense create a Director of Transportation under the Assistant Secretary of Defense for Supply and Logistics. This director would, in addition to establishing policy concerning defense transportation, take over certain traffic management functions, such as rate negotiations, distribution of passenger and

freight traffic among carriers, and representation of the DOD before regulatory bodies, carrier associations, and conferences.[11]

Opposition to the recommendations of the Second Hoover Commission from the DOD was based, in part, on the belief that the recommendations would place functions at DOD level that were administrative in nature, and were rightfully within the purview of the services. The Army, in particular, was adamant in its objection to placing traffic management responsibilities higher than the level of the service staffs. The Army agreed to centralization, in principle, at the service level. However, the Army felt that it was the logical home for the centralized traffic management function—the Army already performed a magnitude of traffic management functions, had a primary interest in land transportation, and had experience in common service support in the transportation field.[12] The services were unable to reach agreement on any basis for consolidating the traffic management function; in fact, the Air Force and Navy favored retaining traffic management functions within the separate services. They recommended the establishment of a jointly manned transportation agency within the DOD that would exercise its responsibilities when commercial transportation available to the Defense Department was not sufficient. Attempts to resolve the issue at JCS level failed, and the issue effectively died at that point.

OSD and the "Single Manager" Concept

Subsequent attempts during this period of time by OSD and the Army to develop a centralized traffic management function were thwarted by inability to secure service coordination on the issue. The Navy and the Air Force presented somewhat of a united front in opposition because of their beliefs that the traffic management function was an integral part of the logistic system, which was the responsibility of the individual services.

By early 1956, Secretary of Defense Charles E. Wilson had decided to move ahead with continued consolidation and designated the Secretary of the Army as the "single manager" for all military traffic in the continental United States, and in July the Military Traffic Management Agency (MTMA) was created to act as the executive agent of the Army Secretary in carrying out his traffic management responsibilities.[13]

In 1958 the House Committee on Government Operations issued a report that was highly critical of Defense Department policies regarding the procurement of civil airlift.[14] The committee issued 22 recommendations, including suggestions that the Secretary of Defense give consideration to creating a single agency responsible for traffic management. In May 1959, the Defense Department responded to the suggestion with the following statement:

> The objective of the organization of transportation management and operations within DOD is to assure the required degree of responsiveness of available transportation resources to meet approved military requirements under all conditions. We are not satisfied that reorganizing various military agencies in the transportation field so that traffic management worldwide is lodged in a single agency, as suggested by the recommendation, is necessary or desirable at this time. In order to assure the successful implementation of approved emergency plans, it is necessary that certain controls over transportation resources available to the DOD be exercised by the Joint Chiefs of Staff. Any centralization of transportation management that would deprive the JCS of these controls must be unacceptable.[15]

This statement points up an issue that persists to the present, and that is the organizational placement of centralized transportation management in such a way that it is both available to OSD policy guidance and responsive to the operational direction of the Joint Chiefs.

A short time after the creation of the Defense Supply Agency in 1961, the MTMA was removed from the Department of the Army, placed in the new agency, and renamed the Defense Traffic Management Service (DTMS). This assignment was short-lived, however, and in November 1964, following the completion of a study conducted by the Joint Chiefs of Staff on the CONUS air and ocean terminal system,[16] the Secretary of the Army was given broader responsibility for military transportation management and was designated the single manager for military traffic, land transportation, and common-user ocean terminals.[17] The Secretary,

in turn, established the Military Traffic Management and Terminal Service (MTMTS), receiving functions and resources from both the Defense Supply Agency and the military services. (In 1974, MTMTS was redesignated the Military Traffic Management Command (MTMC), a designation more closely related to those of the other two transportation operating agencies.)

The Special Assistant for Strategic Mobility

In 1965 an ad hoc study group, with representatives from each of the services, evaluated the adequacy of mobility planning and operations organizations within the DOD.[18] The group evaluated several organizational alternatives, seeking a means of improving transportation management. The group concluded that a central focus for transportation matters within the DOD would be beneficial, but that drastic organizational alteration would not be justified. The group recommended the establishment, within the Office of the Joint Chiefs of Staff, of a Special Assistant for Strategic Mobility. The purpose of such an assistant would be to act as an overall data-gathering, coordinating, and planning organization. Secretary of Defense Robert S. McNamara, in March 1966, established the Office of the Special Assistant for Strategic Mobility (SASM), and charged the office with the responsibility for:

> A. The analysis, evaluation, and monitoring of all aspects of strategic movement planning and operations with the objective of attaining an "overview" whereby the identification and solution of strategic movement problems and the achievement of an effective strategic movement posture will receive optimum consideration.
>
> B. Joint transportation planning, policy, and guidance, including the matters pertaining to joint and international transportation operations.
>
> C. The administration and support of the Joint Transportation Board and its elements.[19]

The effectiveness of SASM during its short lifetime is questionable. While its charter granted authority for analysis, evaluation, and planning, it did not give the organization any control functions that would enable it to allocate or manage transportation resources. The SASM was not universally accepted within the

DOD, and some transportation managers considered it to be a "holding action" against efforts to develop and establish an overall transportation control agency within the DOD. In late 1969, a reduction in force was directed for the Office of the Joint Chiefs of Staff, and the Deputy Chief of Staff for Logistics was appointed the Deputy Director for Strategic Mobility.

EVOLUTION TOWARD INTEGRATION: 1970-1977

The Blue Ribbon Defense Panel

In 1970, the Blue Ribbon Defense Panel, as a part of their larger study of the organization and management of the Department of Defense, evaluated the organization, operation, and management of defense transportation. The panel pointed out that each of the single managers shared overlapping and duplicate functions with the others, and that none of the organizations exercised any traffic management functions within the overseas areas, thereby separating the management of the allocation of the resource from the control of the operation of the resource. The panel concluded that "the lack of any significant degree of traffic management integration contributes to the loss of efficiency and economy, as well as to impairment of the effectiveness of supply support to combat forces."[20] The panel also pointed out that, in a period of declining budgets (much the same as we are experiencing at this time), the fragmentation of the logistic function served to insure that no unified logistic voice would be available to argue effectively for the logistic share of the budget. Another point made by the panel was that, because there was no central logistic management function available, the only place where central overview of the system could be made was in the Office of the Secretary of Defense. This led, the panel felt, to an overinvolvement of the OSD in day-to-day operational matters, instead of the broad policymaking functions for which it was intended. Several other commentaries on the role of OSD in transportation-related matters have repeated this view.

The Blue Ribbon Defense Panel recommended the creation of a Unified Logistics Command that would have the responsibility for providing, not only transportation, but supply distribution and maintenance as well, to the Unified and Specified Commands. The Logistics Command would be assigned all traffic management

functions that were being performed by the single managers and the theater traffic management agencies. The two main transportation operators, Military Airlift Command and the Military Sea Transportation Service, would both be assigned to the Logistics Command.[21] These recommendations essentially divided the functions of defense transportation into traffic management and transport operation, centralizing the management function, and leaving the operational task with the separate services.

The Secretary of Defense decided against the creation of a Unified Logistics Command, but continued to seek a more rational approach to defense traffic management. Discussions of alternative solutions centered on several specific options, including:

1. Establish MSC as the DOD integrated surface traffic manager for both land and ocean shipments.
2. Establish MTMTS as the integrated manager.
3. Establish a Defense-level traffic management agency for surface shipments.
4. Establish a triservice joint agency for all traffic management, leaving modal responsibilities within the services.
5. Establish a Special Assistant to the Secretary of Defense for transportation to coordinate activities of the existing transportation organizations.
6. Establish a total DOD transportation agency.
7. Maintain the status quo.[22]

No consensus was reached on these alternatives, and in February 1971, the Deputy Secretary of Defense issued a directive that would have transferred certain Navy transportation functions from the Military Sealift Command to the Military Traffic Management and Terminal Service of the Army. Included in the proposed transfer were Navy responsibilities for the procurement of ocean shipping.

This proposed realignment of functions became one of the most controversial of recent attempts at defense organizational realignment. The testimony before Congress was heated. Underlying

the testimony was the charge that coordination of the proposed transfer had been handled in a veil of secrecy, and that only a few top DOD managers had been privy to the decisions surrounding the transfer. It was a fact that the proposal was handled poorly, for the Joint Chiefs of Staff, who have statutory responsibility for logistics, were not consulted prior to the release of the directive.[23] The JCS expressed concern over the proposed transfer, particularly over its impact on the development and implementation of contingency plans. The Special Subcommittee on Transportation of the House Armed Services Committee, which was hearing testimony on the proposal, agreed with the Joint Chiefs, and in their final report recommended the withdrawal of the proposed transfer directive, or the initiation of legislation that would forbid its implementation. Faced with this concerted opposition, OSD took no further action on the proposed transfer.

Revision of the MTMC Charter

Continued evolution toward integration within the Defense Transportation System occurred in 1975 with a revision to the MTMC Charter, assigning responsibility for overseas common-user ocean terminal operation to that command. Effective 1 July 1976, MTMC assumed responsibility for military common-user ocean terminals in Northern and Central Europe. This responsibility has seen continued expansion, with the acquisition of terminal responsibility at Leghorn, Italy, in October 1976; Okinawa in October 1977; and Yokohama, Japan, in February 1978.

JCS Study of TOA Organization

The most recent efforts in developing a more integrated transportation system within the Department of Defense began as a result of a request in November 1975 from the Senate Committee on Appropriations that the Department of Defense submit a report on the management of transportation in DOD. The committee found during their hearings that:

> . . . no single organization in the Defense Department to date has indicated a capability or desire to address the overall management of logistical transportation—air, sea, and surface—in order to insure that there is efficient use of all three modes.[24]

One result of this request was initiation of a study by the Joint Chiefs of Staff, independent of the DOD requirement, concerned with organizational alternative arrangements for control of the three transportation operating agencies (TOA).[25] The JCS study evaluated eight organizational alternatives:

1. MAC as a specified command and MSC and MTMC as transportation operating agencies (TOA).
2. MAC and MSC operating as specified commands both supported by MTMC as a TOA.
3. MAC, MSC, and MTMC operating as separate specified commands.
4. A single command for surface transportation to complement the specified MAC.
5. A transportation command composed of MAC, MSC, and MTMC retaining their individual identities and operating as a unified command.
6. A single DOD transportation management agency with MSC and MTMC remaining under Military Department Secretary control and with MAC as a specified command.
7. A single integrated DOD transportation agency responsible for common-user transportation worldwide.
8. A mobility command, functionally organized, reporting directly to the Joint Chiefs of Staff.

After more than a year of intensive staff work and coordination, the Joint Chiefs of Staff forwarded a report, "Transportation Operating Agency Organization Alternatives," to the Secretary of Defense on 15 June 1977. The report concluded that no major deficiencies existed within the current peacetime and wartime TOA organizational arrangements, and unless an in-depth, cost-benefit analysis identified significant possible gains, no further organizational changes should be made. The JCS study is presently under review in the Office of the Secretary of Defense.

Recent Views on Integration

The repeated and continuing efforts of elements within and outside the Department of Defense to develop a more integrated system of transportation management, with increased central control, are obviously not without reason. A brief examination of some of the more recent views supporting increased integration may provide greater insight into the problem.

As pointed out earlier in the paper, study efforts dating to the first Hoover Commission have recommended the establishment of overall traffic management responsibility for both the Department of Defense and for the Federal Government as well. More recent reports continue to cite problems within the DTS that could be overcome by centralization of transportation responsibility. Some accounts even describe ad hoc efforts to overcome system deficiencies through the creation of specialized, localized organizations.

One such report, prepared by Lieutenant General Joseph M. Heiser, Jr., former Commanding General, 1st Logistic Command, Vietnam, cited localized, decentralized traffic management which resulted in waste of transport resources, ineffective use of transport capabilities, and lack of overall knowledge of country-wide transport capabilities.[26] As a result of these deficiencies, the Commander, US Military Assistance Command, Vietnam, established a Traffic Management Agency that operated under the principle of centralized direction and control of traffic management and decentralized traffic operations, service, and coordination. This agency proved, in General Heiser's view, to be highly effective in providing transportation support to the tactical commander. Because of this success, General Heiser recommended that prior to any type of future operation, a centralized traffic management agency be created that would have "operational control of the transportation assets that are available for common-user service."[27]

Major General Maurice F. Casey, former Air Force Director of Transportation, highlighted similar deficiencies in transportation support during the early days of US operations in Vietnam. In discussing the use of containers in the early stages of the Vietnamese buildup, he pointed out bottlenecks and inefficiencies in the overseas distribution system, and discussed some of the prob-

lems encountered in attempting to overcome them. He concluded that the only potentially limiting factor in the successful exploitation of container technology is the "ability to make the adjustments necessary to fully integrate the combined capabilities of containers with the lift vehicles and organizations that are involved in the total distribution process."[28]

Another study effort, conducted in 1974, reviewed the information systems that supported the three TOA's. This study found that each of the operating agencies considered their information systems to be important primarily as generators of internal information. The study also indicated that the TOA's gave little consideration to developing information systems that would be of value to OASD in accomplishing its management responsibilities. As a result, the study found that the OASD review of defense transportation is service oriented, and does not permit focus on the entire transportation system.[29] The study recommended joint development of information systems to allow those systems to benefit the entire Defense Transportation System. Such joint effort implies central review, direction, and development of information to preclude duplication, unnecessary redundancy, and limited scope.

The Total Systems Perspective

Limitations in the effectiveness of the Defense Transportation System, and shortfalls in the capability of the system, are not the only reasons calls for integration have been made. The environment in which the system operates dictates, in many ways, how the system must be structured. Recent developments in transportation technology, such as the dramatic impact of containerization, have forced changes in both the organization and procedures in use in modern transportation systems. The development of an intermodal system stemming from the significant rise in the use of containers in the DOD has provided not only the justification and opportunity, but also the imperative, for significantly increased integration and centralization of the various elements of the Defense Transportation System.

Virtually every strategic mobility movement involves at least two of the transportation modes, and at times all three. If intermodal shipments are to be effectively managed, greater

transfer of information and data between the modes is necessary. Cargo control and in-transit visibility demand accurate, responsive information availability. When cargo moves intermodally, it is common for this information system to break down and for visibility and accountability of consignments to be impaired. In those cases where cargo moves from origins within the CONUS to overseas destinations, and part of the movement is by commercial and part by military means, the paperwork problem is severe, and at times ". . . borders on the chaotic."[30] This unfortunate condition leads to lost cargo, ineffective use of available transportation resources, and consequently, a degradation in overall military capability.

The advent of containerization created a system that crosses operational lines established by mode, and requires management and control from origin to destination.[31] As pointed out by a past commander of the MTMC, Major General John J. Lane, the use of containers

> . . . presents a galaxy of very real problem areas that demand solution. The problems . . . require more definitive, objective and coordinated analysis and development before we can realize the full potential of this type of service.[32]

The combination of limited resources, both in terms of budget dollars and in terms of lift assets, demands that the most efficient, responsive, and economical transportation system possible be developed. As outlined by Major General H. R. Del Mar, USA, Commander, MTMC, before the 1977 Worldwide Strategic Mobility Conference, the approach to solving the deficiencies in the Defense Transportation System must be one of a total systems perspective.[33] All of the assets that make up the transportation system must be molded into an integrated whole if responsive strategic mobility is to be the result. The days when defense transportation could be viewed from the perspective of a particular mode are gone. Integrated application of the transportation capability of the Nation is essential to the future effectiveness of the Defense Transportation System.

ENDNOTES

1. Much of the information for this section was drawn from US Army, Transportation Corps, Office of the Chief of Information, *MTMA, Single Managership of CONUS Traffic; TC in the Current National Emergency: The Post Korean Experience*, Washington, DC, 1958.

2. See, for example, the statement of General Brehon B. Somervell, USA, Commanding General, Army Service Forces, in which he made a strong bid for centralized traffic management, to the point of discounting the possibility of an efficient unified armed force if the services were allowed to retain their individual transportation resources. Statement contained in: US, Congress, House, Select Committee of Post-War Military Policy, *Hearings on House Resolution 465, Part I*, 78th Cong., 1st sess., Washington, DC, 1944, p. 98.

3. *National Security Act of 1947*, Statutes at Large, vol. 61, sec. 202(a)(3), 253 (1947).

4. Ibid.

5. US, Commission on Organization of the Executive Branch of the Government, *The Federal Supply System* (Washington, DC: Government Printing Office, 1949), p. 77.

6. Ibid., p. 112.

7. *The Federal Property and Administrative Act of 1949*, Statutes at Large, vol. 63, sec. 201(a) (1949).

8. 15 *Federal Register* 6938.

9. 19 *Federal Register* 6611.

10. US, Commission on Organization of the Executive Branch of the Government, *Transportation: A Report to the Congress* (Washington, DC: Government Printing Office, 1955), p. 4.

11. Ibid., p. 64.

12. US, Army, Transportation Corps, *MTMA, Single Managership of CONUS Traffic*, p. 8.

13. For additional information on the background and early years of MTMA, see also: US, Department of the Army, *MTMA's First Year, FY 1957: Establishing the Operational Base, TC in the Cur-*

rent National Emergency: The Post Korean Experience (Washington, DC: Office of the Chief of Transportation, 1957).

14. US, Congress, House, Committee on Government Operations, *Military Air Transportation, 1958*, H.R. 2011, 85th Cong., 2d sess., 26 June 1958.

15. US, Congress, House, Committee on Government Operations, *Military Air Transportation, 1959, Hearings before the Subcommittee on Military Operations, 11-14 May 1959*, 86th Cong., 1st sess., 1959, p. 6.

16. US, Department of Defense, "Study of CONUS Air and Ocean Terminal System" (U) (Washington, DC: Office of the Joint Chiefs of Staff, 1964).

17. US, Department of Defense, *DOD Directive 5160.53, Single Manager Assistant for Military Traffic, Land Transportation and Common-User Ocean Terminals*, 24 June 1965.

18. US, Department of Defense, *Report of DOD Study Group on Adequacy of Mobility Planning and Operations Organization* (Washington, DC: Assistant Secretary of Defense (Administration), Joint Ad Hoc Study Group, 1965).

19. "Mr. Transportation is a Key in Military Planning," *Armed Forces Management* 12 (September 1966): 58.

20. US, Blue Ribbon Defense Panel, *Report to the President and the Secretary of Defense on the Department of Defense* (Washington, DC: Government Printing Office, 1970), p. 103.

21. The information contained in this and the previous paragraph was condensed from the *Blue Ribbon Defense Panel Report*, pp. 101-107.

22. US, Congress, House, Committee on Armed Services, *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management and Terminal Service, Hearings before the Special Subcommittee on Transportation, September-October 1971*, 92d Cong., 1st sess., 1971 (Washington, DC: Government Printing Office, 1971), p. 6665.

23. For details of the background and the positions of the various elements involved, see US, Congress, House, Committee on Armed Services, *Proposed Transfer of Military Sealift Command Func-*

tions to Military Traffic Management and Terminal Service, Report by the Special Subcommittee on Transportation (Washington, DC: Government Printing Office, 18 November 1971).

24. US, Congress, Senate, Committee on Appropriations, *Report No. 94-446, to Accompany H.R. 9861*, 94th Cong., 1st sess., 1975 (Washington, DC: Government Printing Office, 1975), p. 150.

25. The recommendations and concepts of the JCS study are discussed in US, Department of the Army, Military Traffic Management Command, *Annual Historical Review (RSC CHIS-6R2), 1 July 1975 to 30 September 1976* (Washington, DC: Military Traffic Management Command, 27 July 1977), pp. 336-340.

26. Lieutenant General Joseph M. Heiser, Jr., *Vietnam Studies: Logistic Support* (Washington, DC: Government Printing Office, 1974), pp. 159-161.

27. Ibid., p. 263.

28. Major General Maurice F. Casey, USAF, "Containerization and Military Air Logistics," *Defense Transportation* 26 (May-June 1970): 60.

29. Logistics Management Institute, *DOD Transportation Information Systems Study—Reconnaissance* (Washington, DC: Logistics Management Institute, 1974), p. 30.

30. Vice Admiral Lawson P. Ramage, USN (Ret), "Comments on Containerization," *Defense Transportation* 26 (May-June 1970): 62.

31. Harrell B. Altizer, "Department of Defense Organizes to Cope With the Intermodal Use of the Container," *Defense Transportation Journal*, February 1975, p. 9.

32. "Does DOD Need One Single Manager for Transportation?" *Armed Forces Management* 15 (March 1969): 52.

33. Major General H. R. Del Mar, USA, "Total Systems Approach to Strategic Mobility," *Proceedings of the 1977 Worldwide Strategic Mobility Conference* (Washington, DC: National Defense University, 1977), p. II-J-2.

CHAPTER VI
A DIRECTION FOR THE FUTURE

In this examination of the Defense Transportation System we have taken a look at the main elements of the system, the operating agencies. We have traced their development and growth, analyzed their capabilities, and discussed some of the more significant areas in which deficiencies in capabilities have been identified. We have examined past, as well as continuing, efforts to sustain or improve defense transportation resources, pointing out both increased capability expected from enhancement programs and possible limitations to those anticipated increases. Finally, we outlined various attempts to develop more integration and centralization in the transportation system in order to provide greater responsiveness, economy, and productivity in strategic mobility capabilities.

DEVELOPMENT OF DEFENSE TRANSPORTATION: AN OVERVIEW

Sea Transportation

Ocean transportation resources have made significant contributions to the national security since the earliest days of the Republic. These resources, and the sealift capability they produce, have developed through a series of peaks and valleys. Over the years, United States military and civil airlift assets have been subject to planned reductions after each war, and have required extraordinary effort in order to be reconstituted to meet new military requirements. While it is understood that reductions in wartime shipping to levels that can be economically maintained in peacetime are necessary, it is difficult to comprehend the logic that repeatedly allows sealift capability, particularly that required for initial military responsiveness, to fall below minimum required levels.

Problems associated with maintaining adequate ocean transportation assets stem from several factors. First, the United States merchant fleet has been unable to remain competitive in world markets. This lack of competitiveness has been a result of numerous factors such as the deleterious effect of militant

maritime unions, high construction costs in US shipyards, and, according to some analysts, major management errors on the part of some shipping companies. A second factor limiting the military utility of the merchant fleet is that it appears that insufficient attention has been given to developing the fleet as a naval and military auxiliary. While both the 1936 and 1970 Merchant Marine Acts describe the fleet in those terms, little has been done to insure that the composition of the fleet is compatible with military needs. At the same time that the fleet has become more productive, with the development of high-speed container ships and giant LNG carriers, it has also become less useful in the carriage of military equipment and supplies. Modern ships also require sophisticated port facilities which, in all likelihood, will not be available in wartime.

United States maritime assets are not sufficient to meet US military needs. Reliance on allied shipping may be able to overcome deficiencies in NATO reinforcement requirements, if they can be made available in sufficient time and in adequate numbers, but will contribute nothing to other contingency requirements in support of US national security objectives.

Government efforts to develop and maintain adequate merchant sealift resources that would be available to meet national security requirements have been concentrated in the areas of subsidy payments, tax deferrals, and cargo preference legislation. Serious questions have been raised concerning the adequacy of these programs in terms of improvement of the merchant fleet, contribution to the overall economy, or contribution to national defense. Some studies have questioned the basic direction of the thrust of the programs. The studies concluded that since the economic benefits, which are the primary goals of government support programs, have not been realized, the programs would produce greater value if redesigned for the production of military benefits.

Sealift enhancement programs such as the Sealift Readiness Program and the Ready Reserve Program have increased immediately available sealift capability; however, neither program is without serious reservations and limitations.

Airlift

The development of military airlift capability has been one of the most successful aspects of the evolution of the DTS. However, the impressive increases in airlift capability that have occurred since the end of World War II have not kept pace with lift requirements derived from evolving contingency and war plans. Civil airlift capability of a type readily available for military use, which constitutes a large part of total mobility capability, has not developed as rapidly as military planners have desired. Civil Reserve Air Fleet (CRAF) procedures provide an excellent means for acquiring rapid augmentation from the air transport industry, but the configuration of most civil aircraft is not compatible with anticipated airlift needs.

Airlift enhancement programs have been designed to increase or extend airlift capability in an effort to meet known requirements, but as yet, capability has not equaled the requirement. Airlift enhancement programs are also extremely expensive, and face severe competition from other military requirements and domestic needs for budget dollars. Programs designed to enhance the military-owned and -operated air fleet tend to exacerbate the problem of civil-military competition for the limited air freight that is available. Without available cargo, or some program of direct government operating subsidy, airlines find it impossible to invest in the development of increased cargo capability.

Land Transportation and Traffic Management

The evolution of traffic management in the DOD was seen as a part of the larger, and more complex, issue of unification within the armed services. We have seen where, for more than 30 years, repeated studies, commissions, boards, committees, and ad hoc groups have recommended increased integration and centralization of the traffic management function in the Department of Defense, only to meet with constant and predictable resistance from within the very department that the integration is designed to improve. Old, long-held service prerogatives, and strongly felt, if sometimes misplaced, prejudices concerning the proper placement of planning, direction, and control functions within the Defense Transportation System have always surfaced when the issue of consolidating traffic management functions was raised.

Historically, objections to integrated transportation management have been based on the notion that transportation was inseparable from supply and it was necessary for the services to retain control over their transport resources if they were to be able to successfully accomplish assigned operational missions. A strong case can be made in refuting such contention, particularly in the case of the management of strategic lift assets. Since World War II, logistic functions in the DOD have, through an evolutionary process, become more and more integrated. So many items such as fuel, subsistence items, and other common supply needs are furnished through the integrated supply system of the Defense Logistics Agency that it is apparent that the services are no longer "self-sufficient" in their logistic support activities. Integration, to a degree, has already occurred through the single manager assignments of transportation resources along modal lines. While it is obvious that the services require some specialized transport capability to support operations where common-user service cannot meet pressing operational needs, such as carrier on-board delivery (COD), it does not hold true that centralized management of strategic lift assets will render the services unable to accomplish their mission. At the present, in wartime these assets will be allocated to meet mission priorities established by the Joint Chiefs of Staff and, for all practical purposes, will no longer be subject to the prerogatives of a particular service.

The primary difference between current discussions of integration of traffic management and overall transportation management and those of past years is essentially one of the environment in which the transportation system is operating. Increases in transportation technology have generated management problems that demand revision of organizational arrangements and operating procedures. The increases in capability that can be realized through the efficient use and increased development of container technology can go a long way toward alleviating some of the shortfall in capability that we now face. These increases, however, can only be gained if the intermodal capabilities of container systems are fully exploited. This exploitation can only be accomplished through the establishment and use of central direction and control of the transportation system.

Recommendations for organizational change that would lead to increased centralization must meet several separate, but related, criteria. First, the proposed organization must remain responsive to unified command through the Joint Chiefs of Staff. Second, the organization must remain readily available to OASD for policy guidance and direction. Third, the system that is established should be given sufficient authority to effectively manage the broad range of activity that constitutes the Defense Transportation System. Fourth, the organization and its activities should contribute to more economical peacetime operation and to a more productive wartime capability. Finally, the organization should give due consideration to the responsibilities of the services in the provision of logistical support, without letting service prerogative become, as it has in the past, the overriding consideration.

A UNIFIED TRANSPORTATION COMMAND

Of the various organizational alternatives that have been evaluated by past study efforts, one option, the establishment of a Unified Transportation Command, appears best to meet the needs of the current Defense Transportation System, and the majority of the qualifications sought by those elements within the DOD who hold proprietary interest in its operation. Establishment of a unified organization, charged with the responsibility for overall management and development of the Defense Transportation System, could significantly reduce duplicative activity, particularly in the planning and ADP functions, eliminate redundant support systems, and resolve conflicting policy objectives. It would provide central direction and control of defense transportation resources, contributing to the most efficient application of available resources to known requirements. It would allow for the orderly development of a total systems approach to defense transportation promotional activities, both for military-owned assets and commercial capability. Perhaps most importantly, it would create a single spokesman for defense transportation needs in the competition for budget dollars which would strengthen arguments for needed improvements in strategic mobility assets.

292-919 O - 79 - 7

AD-A070 588 NATIONAL DEFENSE UNIV WASHINGTON D C RESEARCH DIRECTORATE F/G 15/5
DEFENSE TRANSPORTATION ORGANIZATION: STRATEGIC MOBILITY IN CHAN--ETC(U)
MAY 79 M E DANIEL

UNCLASSIFIED NATL SEC AFFAIRS MONO-79- NL

2 OF 2
AD
A070588

END
DATE
FILMED
8-79
DDC

Organization and Responsibilities

As envisioned, the United States Transportation Command (USTRANSCOM) would be a unified command, reporting through the Joint Chiefs of Staff to the National Command Authorities. The command would consist of component commands, made up of the Military Airlift Command, Military Sealift Command, and Military Traffic Management Command. The component commands would retain their individual organizational identities as major commands of their respective services (although changes in designations may be required to more accurately depict organizational roles as service components). The individual services would continue to be responsible for providing administrative and logistical support to day-to-day operations, and would be responsible for research, development, and procurement, in coordination with TRANSCOM, of replacement transportation assets. The services would also continue to recruit, train, and maintain personnel resources committed to TRANSCOM, and would retain responsibility for combat readiness of participating units and their assigned equipment.

The CINCTRANSCOM would be responsible for developing, operating, and maintaining an integrated, centrally controlled transportation system, responsive to the needs of national defense. Included in this responsibility would be operational control and direction of assigned component forces in the day-to-day operation of the Defense Transportation System. TRANSCOM would be responsible for the accomplishment of those functions normally classified as traffic management, including requirement validation, mode election, routing, documentation, and rate negotiation and establishment. Transportation requests would be filled, based on priorities established by the JCS. TRANSCOM would also be responsible for establishing and maintaining an integrated information system that would service each of the component commands, the JCS, and provide information to OASD/MRA&L.

Benefits Versus Costs

A number of tangible benefits would be gained from the establishment of USTRANSCOM. The headquarters would create, for the first time, one single DOD point of contact for transportation-related matters. This single point of contact would serve not only as the spokesman for DOD transportation interests, but would also

act as the single interface between DOD and the commercial sector. Procurement activities relating to transportation would be accomplished from a single organization, operating from a single philosophical base, thereby reducing conflicting procurement policies and practices. Because of the consolidation of functions that will be possible with the establishment of USTRANSCOM, considerable savings in manpower and facilities should be realized —savings that can be reallocated to weapon system operations, and other combat-related activities. While it is realized that the establishment of a new headquarters might be an expensive endeavor, that expense might be reduced by placing the TRANSCOM operation at an established operating location, such as MacDill AFB, collocating TRANSCOM with USREDCOM, or at Scott AFB, the present home of the Military Airlift Command.

In discussing the costs involved with the establishment of USTRANSCOM, a comment concerning cost/benefit analysis is in order. In the past, a number of excellent studies ended with the concluding recommendation that additional cost/benefit analysis should be undertaken before positive action should be taken. In the case of organizational changes designed to improve operations, better utilize resources, and provide overall increased combat capability, it is sometimes impossible to accurately quantify the dollar value of managerial improvements, or gains in combat productivity. In some cases, calls for additional study have merely been actions designed to put off change or further delay implementation of needed shifts in responsibility. In many ways the issue of integration in transportation has been subject to this treatment. During discussions of proposed sealift procurement consolidation actions in 1971, it was pointed out by then Assistant Secretary of Defense, Barry J. Shillito, that savings estimates relative to organizational realignments can vary considerably, and are dependent on many factors. Savings estimates for the proposed merger in 1971 ranged from $15-$40 million, a wide range if cost is to be the primary concern. But, as pointed out by Mr. Shillito, often dollar savings should be considered a welcome fallout rather than the primary driving force behind a decision.[1] As a sidelight, the estimated savings of $30 million per year expected in the establishment of the Defense Supply Agency have been far exceeded since the organization was formed in 1961.[2] Any savings

that were realized through headquarters consolidation would be available for application to other weapon systems, or for improving strategic mobility capabilities.

CONCLUSION: A TIME FOR CHANGE

In the past, numerous factors have joined to forestall needed improvements in the Defense Transportation System. In many cases the reasons behind resistance to transportation integration were valid—for defense transportation needs, within the limitations discussed in this paper, have continued to be met. This does not alter the fact that it is possible to accomplish these tasks in more efficient ways, at less expense, and with the result of increased productivity in combat transportation operation.

Perhaps the most important incentive for integrating defense transportation resources is found in a point made earlier in the paper. The environment in which the Defense Transportation System operates is significantly different from that of only 10 to 20 years ago. We are faced with an opponent that has stated the intention, and possesses the capability, to launch attacks with very short notice with a force of 80-90 divisions. Unlike past encounters, the United States, in all likelihood, will not be given the opportunity to spend months in preparation for war. That preparation must be made now. We have developed a strategy of flexible response that is totally dependent on the strategic mobility capabilities of the United States. Without the capability to reinforce Europe and sustain combat operations there, flexible response becomes a meaningless term. Without a responsive transportation system, that can be employed with flexibility, and in adequate measure, we are without strategic mobility.

In addition to changes in the defense environment, we are faced with technological innovations that have, in many ways, outmoded many of the ways we currently do business. If we are going to be able to use the limited resources that we have at our disposal to meet increasing strategic mobility requirements, we must have available an organization that can make rational decisions regarding mode selection, lift priorities, and technical feasibility relative to transportation assets. The rationalization of the transportation system through integration and centralization can provide such an organization.

ENDNOTES

1. US, Congress, House, Committee on Armed Services, *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management Command, Hearings before a Special Subcommittee on Transportation* (Washington, DC: Government Printing Office, 1971), p. 6667.

2. US, Defense Logistics Agency, *An Introduction to the Defense Logistics Agency* (Cameron Station, VA: Public Affairs Office, 1978), p. 2.

GLOSSARY OF ABBREVIATIONS

AAVS	Aerospace Audiovisual Service
ARRS	Aerospace Rescue and Recovery Service
ASIF	Airlift Services Industrial Fund
ATC	Air Transport Command
ATCA	Advanced Tanker Cargo Aircraft
AWS	Air Weather Service
AUTOSTRAD	Automated System for Transportation Data
CINCMAC	Commander in Chief Military Airlift Command
CMLTO	Central Military Land Traffic Office
CNO	Chief of Naval Operations
COADS	Command Administrative Data System
COD	carrier on-board delivery
COTS	Container Offloading and Transfer System
CRAF	Civil Reserve Air Fleet
CTF	Cruiser and Transport Force
DFRIF	Defense Freight Railway Interchange Fleet
DTMS	Defense Traffic Management Service
DOD	Department of Defense
DTS	Defense Transportation System
EUSC	Effective US Control Fleet
FAST	Freight Automated System for Traffic Management
GAO	General Accounting Office
GSA	General Services Administration
ICC	Interstate Commerce Commission
JCS	Joint Chiefs of Staff
JLTA	Joint Land Transportation Agency
LASH	lighter-aboard-ship
LOTS	logistics over the shore
LRI	Long-Range International
MAC	Military Airlift Command
MAPS	Mobility Analysis and Planning System
MARAD	Maritime Administration
MATS	Military Air Transport Service
MODS	Mobility Operations Data System
MSC	Military Sealift Command
MSTS	Military Sea Transportation Services
MTM	million-ton-miles
MTMA	Military Traffic Management Agency

MTMC	Military Traffic Management Command
MTMTS	Military Traffic Management and Terminal Service
NATO	North Atlantic Treaty Organization
NATS	Naval Air Transport Service
NDRF	National Defense Reserve Fleet
NOTS	Naval Overseas Transportation Service
NSA	National Shipping Authority
ODS	Operating-Differential Subsidies
PASTRAM	Passenger Traffic Management System
POL	petroleum, oil, and lubricants
RRF	Ready Reserve Force
SASM	Special Assistant for Strategic Mobility
SRI	Short-Range International
SRP	Sealift Readiness Program
TEA	Transportation Engineering Agency
TERMS	Terminal Management System
TOA	Transportation Operating Agency
TTU	Transportation Terminal Unit
UE	unit equipment
USAREUR	US Army, Europe
USREDCOM	United States Readiness Command
USTRANSCOM	United States Transportation Command
WHIST	Worldwide Household Goods Information System for Traffic Management

BIBLIOGRAPHY

BOOKS

Ball, Joseph H. *Government Subsidized Union Monopoly: A Study of Labor Practices in the Shipping Industry*. Washington, DC: Labor Policy Association, 1966.

Barker, James R. *The United States Merchant Marine in National Perspective*. Lexington, Mass.: Heath Lexington Books, 1970.

Brown, Neville. *Strategic Mobility*. New York: Frederick A. Praeger, 1963.

Cleveland, Reginald M. *Air Transport at War*. New York: Harper and Bros., 1949.

Futrell, Robert F. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force 1907-1964*. Maxwell AFB, Alabama: Air University, 1971.

Jantscher, Gerald R. *Bread Upon the Waters: Federal Aids to the Maritime Industries*. Washington, DC: Brookings Institution, 1975.

Knight, Clayton. *Lifeline in the Sky: The Story of MATS*. New York: Harper and Bros., 1949.

Lawrence, Samuel A. *United States Merchant Shipping Policies and Politics*. Washington, DC: Brookings Institution, 1966.

Logistics Management Institute. *DOD Transportation Information Systems Study—Reconnaissance*. Washington, DC: Logistics Management Institute, 1974.

McDowell, Carl E. *Ocean Transportation*. New York: McGraw-Hill, 1954.

Sidorenko, A. A. *The Offensive (A Soviet View)*, Translated by US Department of the Air Force. Washington, DC: Government Printing Office, 1976.

The Economic Value of the United States Merchant Marine. Evanston, Ill.: Northwestern University, 1961.

Ulanoff, Stanley M. *MATS: The Story of the Military Air Transport Service*. New York: Franklin Watts, Inc., 1964.

MAGAZINE AND JOURNAL ARTICLES

Altizer, Harrell B. "Department of Defense Organizes to Cope With the Intermodal Use of the Container." *Defense Transportation Journal*, February 1975, p. 9.

Blackwell, Robert J. "The Maritime Administration." *Seapower* 20 (4 April 1977): 45.

Caputo, Vincent F. "Transportation Procurement and the DOD." *Defense Transportation Journal*, January-February 1972, pp. 26-27. Mr. Caputo, DOD Director for Transportation and Warehousing Policy, OASD/I&L, and honorary President, NDTA, discusses the defense procurement process and how it is affected by national policies such as the Buy American Act and the Small Business Act. While touching on such areas as equal opportunity and minimum wage, he reflects the concern of DOD for the health of the commercial transportation sector. "The overriding concern of DOD transportation procurement as provided in these applicable rules and regulations is to obtain transportation services of the required quality in a timely fashion and at the lowest reasonable cost." (p. 26)

Carlton, Paul K., General, USAF. "Military Airlift Commander Calls for Dynamic Development of All Cargo Aircraft." *Defense Transportation Journal* 31 (December 1975): 26-34.

Casey, Maurice F., Major General, USAF. "Containerization and Military Air Logistics." *Defense Transportation* 26 (May-June 1970): 60.

"Civil Reserve Air Fleet." *Defense Transportation Journal* 34 (August 1977): 50-56.

Del Mar, H. R., Major General, USA. "Streamlining for Tomorrow." *Defense Management Journal* 11 (April 1975): 33.

"Does DOD Need One Single Manager for Transportation?" *Armed Forces Management* 15 (March 1969): 50-52.

"From John Paul Jones to Superships, Sea Played Vital Role in US Life." *Commerce Today* 5 (7 July 1975): 18.

Gatov, Albert W. "National Security Aspects of Ocean Transportation." *Proceedings of the American Merchant Marine Conference.* New York: The Propeller Club of the US, 1954, p. 181.

Heine, Irwin M. "US Merchant Marine: Right on Course." *Commerce America* 1 (22 November 1976): 6-9.

Johnson, Nicholas. "The State of Our Merchant Fleet." *Naval Review 1967*, 1967, p. 25.

Kendall, Lane C. "US Merchant Shipping and Vietnam." *Naval Review 1968*, 1968, p. 131.

Kidd, I.C., Jr. "Strategic Mobility: Logistics Unlimited." *The Atlantic Community Quarterly* 16 (Spring 1978): 33-45.

Lunsford, Everrett P., Jr. "Our Merchant Marine and Their Unions." *United States Naval Institute Proceedings* 101 (May 1975): 66-85.

McCleave, Robert E. "The National Defense Requirement for a US Flag Merchant Marine." *Naval War College Review* 21 (June 1975): 64-79.

"Maritime Labor: The Ally Within." *Seapower* 19 (February 1976): 11-16.

Morse, John H. "Questionable NATO Assumptions." *Strategic Review* 5 (Winter 1977): 21-29.

"Mr. Transportation is a Key in Military Planning." *Armed Forces Management* 12 (September 1966): 58.

"MTMC at 13." *Translog* 9 (February 1978): 6.

"MTMC Gains Okinawa Terminals." *Translog* 8 (October 1977): 15.

Patch, Paul F., Major General. "Airlift Enhancement: Issues and Answers." *Translog* 5 (June 1974): 4.

Polk, James H. "The New Short War Strategy." *Strategic Review* 3 (Summer 1975): 58-64.

Prina, L. Edgar. "Solving the Sealift Shortage." *Seapower* 19 (October 1976): 25.

Quinones, Linda M. "LOTS Test Indicates Intermodal Carriers Can Support Troops." *Sealift* 27 (October 1977): 8.

Ramage, Lawson P., VADM, USN, Ret. "Comments on Containerization." *Defense Transportation* 26 (May-June 1970): 62.

"Reserve Forces Provide 10-Day MSC Augmentation." *Sealift* 27 (October 1977): 5.

Truver, Scott C. "The Military Sealift Command's Build and Charter Program for Nine Sealift-Class Tankers." *Naval War College Review* 28 (Fall 1975): 32-44.

Ulsamer, Edgar. "ATCA—Key to Global Mobility." *Air Force* 59 (April 1976): 24.

Velie, Lester. "They're Finding Better Ways Than Strikes." *Reader's Digest* 104 (March 1974): 173-180.

Whitehurst, Clinton H., Jr. "The Defense Transportation System: Competitor or Complement to the Private Sector?" *Defense Transportation Journal* 34 (August 1977): 44-48.

This article is a spinoff from Mr. Whitehurst's book of the same title published by American Enterprise Institute for Public Policy Research in 1975. In this article the author advocates the replacement of the military transportation system by commercial capability. He ascertains that at the present time the DOD depends on the commercial segment for the majority of transportation capability, both in peace and during war. He cites recommendations by the Hoover Commission of 1955 and the Blue Ribbon Defense Panel of 1970 to illustrate and document his case. He posits several recommendations for organizational and responsibility changes in the DOD that, in his view, will aid in reducing duplication in the Defense Transportation System capability.

Whitehurst, Clinton, H., Jr. "The National Defense Reserve Fleet: Past, Present, and Future." *US Naval Institute Proceedings* 103 (February 1977): 27.

"Who's Who at MTMC Units." *The MTMC Expediter* 1 (January 1978): 3.

Zav'yalov, I.G. (General-Lieutenant). "Novoye oruzhiye: voyennoye iskusstvo" [The new weapon and military art]. *Red Star* (Moscow), 30 October 1970, pp. 2-3. Cited in *Selected Military Writings, 1970-1975*. Washington, DC: Government Printing Office, 1976.

US GOVERNMENT DOCUMENTS AND REPORTS

An Act to Amend the Merchant Marine Act of 1936. Statutes at Large, vol. 84 (1970).

An Act to Establish a United States Shipping Board. Statutes at Large, vol. 39 (1916).

An Act to Further Develop an American Merchant Marine. Statutes at Large, vol. 45 (1928).

Blaker, James, and Hamilton, Andrew. *Assessing the NATO/ Warsaw Pact Military Balance*. Washington, DC: Government Printing Office, 1977.

Civil Aeronautics Act of 1938. Statutes at Large, vol. 51 (1938).

Del Mar, H. R., Major General, USA. "Total Systems Approach to Strategic Mobility." *Proceedings of the 1977 Worldwide Strategic Mobility Conference*. Washington, DC: National Defense University, 1977.

Federal Property and Administrative Services Act. Statutes at Large, vol. 63 (1949).

Forrestal, James. *Memorandum: Organization and Mission of the Military Air Transportation Service (MATS)*, 3 May 1948.

Heiser, Joseph M., Lieutenant General, USA. *Vietnam Studies: Logistic Support*. Washington, DC: Government Printing Office, 1974.

Ingle, Jack C., and Burden, Dan B., Jr. "Department of Defense Transportation: Evolution, Status and Problems." M.S. Thesis, Air Force Institute of Technology, 1968.

Memorandum of Understanding By and Between the Secretary of Defense and the Secretary of Commerce With Respect to the Civil Reserve Air Fleet Program, 8 August 1963.

Merchant Marine Act of 1920. Statutes at Large, vol. 41, sec. 1, 988 (1920).

Merchant Marine Act of 1936. Statutes at Large, vol. 49, chapter 858, Title I, sec. 101 (1936).

Merchant Shipping Sales Act. Statutes at Large, vol. 60 (1941).

National Security Act. Statutes at Large, vol. 61 (1947).

Ostrom, Arnold E. *Defense Transportation: The Military Traffic Management and Terminal Service*. Industrial College of the Armed Forces Monograph Series. Washington, DC: Industrial College of the Armed Forces, 1967.

Reorganization Plan No. 21 of 1950. Statutes at Large, vol. 64 (1950).

Riley, Paul H. "TOA Operations—Relationship to Total Force Concept." A presentation to the Worldwide Logistics Conference. Quoted in US, Department of Defense, Joint Chiefs of Staff, *Report on Worldwide Logistics Conference, 22-24 April 1975*, 1975.

Udell, Gilman G. *Laws Relating to Shipping and Merchant Marine*. Compiled by Superintendent, Document Room, House of Representatives. Washington, DC: Government Printing Office, 1964.

Executive Documents

Blue Ribbon Defense Panel. *Report to the President and the Secretary of Defense of the Department of Defense*. Washington, DC: Government Printing Office, 1970.

Commission on Organization of the Executive Branch of Government. *The Federal Supply System*. Washington, DC: Government Printing Office, 1949.

Commission on Organization of the Executive Branch of the Government. *Transportation: A Report to the Congress*. Washington, DC: Government Printing Office, 1955.

Comptroller General of the United States. *Airlift Operations of the Military Airlift Command During the 1973 Middle East War*. General Accounting Office Report LCD 75-204, April 16, 1975. Washington, DC: General Accounting Office, 1975.

Comptroller General of the United States. *Information on the Requirement for Strategic Airlift.* GAO Report No. PSAD-76-148. Washington, DC: General Accounting Office, 1976.

Comptroller General of the United States. *Report on Audit of United States Maritime Commission.* H. Doc. 465, 81st Cong., 2d sess., 1950.

Defense Logistics Agency. *An Introduction to the Defense Logistics Agency.* Cameron Station, VA: Public Affairs Office, 1978.

Department of the Air Force. *Air Force Fact Sheet 77-35.* Washington, DC: Secretary of the Air Force Office of Information, 1977.

Department of the Air Force. "Military Air Transport Service, General Policies for Mobilization of the Civil Air Carrier Industry." Scott AFB, Ill.: HQ MATS, 1948.

Department of the Air Force. "Report to the 95th Congress." Presentation to the Committee on Armed Services, House of Representatives, by Honorable John J. Martin and General David C. Jones, March 1977.

Department of the Air Force. *The Story of MATS.* Washington, DC: Government Printing Office, 1951.

Department of the Army. *MTMA's First Year, FY 1957: Establishing the Operational Base, TC in the Current National Emergency.* Washington, DC: Office of the Chief of Transportation, 1957.

Department of the Army. *MTMA: Single Managership of CONUS Traffic, TC in the Current National Emergency.* Washington, DC: Office of the Chief of Transportation, 1958.

Department of the Army. Military Traffic Management Command. *Annual Historical Review (RCS CHIS-6R2), 1 July 1975 to 30 September 1976.* Washington, DC: Military Traffic Management Command, 27 July 1977.

Department of the Army. Military Traffic Command. *DOD's Traffic Manager.* Washington, DC: Military Traffic Command, 1977.

Department of the Army. *Impact of Unification, 1946-1950, The Transportation Corps in the Current National Emergency*, by Harry B. Yosphe. Historical Report No. 6, Office of the Chief of Transportation. Washington, DC: Department of the Army, 1956.

Department of the Army. *Organization, Mission, and Functions, Military Traffic Management Command, MTMC Regulation 10-2*. Washington, DC: Department of the Army, 1977.

Department of the Army. *The Transportation Corps: Responsibilities, Organizations and Operation*, by Chester Wardlow, Office of the Chief of Military History, United States Army. Washington, DC: Government Printing Office, 1951.

Department of Commerce. *Effective United States Control of Merchant Ships: A Statistical Analysis, 1970*. Prepared by Irvin M. Heine and Muriel W. Coe. Washington, DC: US Maritime Administration, 1970.

Department of Commerce. *MARAD 1971, Year of Breakthrough*. The Annual Report of the Maritime Administration for Fiscal Year 1971. Washington, DC: Government Printing Office, 1971.

Department of Defense. *Annual Defense Department Report, FY 1975*, by James R. Schlesinger. Washington, DC: Government Printing Office, 1974.

Department of Defense. *Annual Defense Department Report, FY 1978*, by Donald H. Rumsfeld. Washington, DC: Government Printing Office, 1977.

Department of Defense. *Department of Defense Annual Report, FY 1979*, by Harold Brown. Washington, DC: Department of Defense, 1978.

Department of Defense. *DOD Directive 5160.1, Single Manager Assignment for Airlift Services*, 7 December 1976.

Department of Defense. *DOD Directive 5160.53, Single Manager Assignment for Military Traffic, Land Transportation, and Common User Ocean Terminals*. Washington, DC: Assistant Secretary of Defense (I&L), 24 March 1967.

Department of Defense. "Exemption of Department From Certain Provisions Under Title II of the Federal Property and Administrative Services Act." *Federal Register* 19, No. 200, 14 October 1954.

Department of Defense. Joint Chiefs of Staff. *JCS Publication 1, Dictionary of Military and Associated Terms.* Washington, DC: Government Printing Office, 1974.

Department of Defense. Joint Chiefs of Staff. *United States Military Posture for FY 1979, Statement by General George S. Brown, USAF, to the Congress on the Defense Posture of the United States for FY 1979.* Washington, DC: Office of the Joint Chiefs of Staff, 20 January 1978.

Department of Defense. Military Traffic Management Command. *Annual Historical Review (RCH CHIS-6 (R2): 1 July 1975 to 30 September 1976.* Washington, DC: Military Traffic Management Command, 1976.

Department of Defense. Military Traffic Management Command. *MTMC Worldwide Traffic Management Summary (RCS 493 (Q) (L&L)), MTMC/MT-CMP.* Washington, DC: Military Traffic Management Command, 15 December 1977.

Department of Defense. Military Traffic Management Command. Transportation Engineering Agency. *An Introduction to MTMCTEA.* Newport News, VA: Transportation Engineering Agency, 1977.

Department of Defense. Military Air Transportation Service. *The Role of Military Air Transport Service in Peace and War.* Washington, DC: Government Printing Office, 1969.

Department of Defense. Office of the Joint Chiefs of Staff. *Study of CONUS Air and Ocean Terminal System (U).* Washington, DC: Office of the Joint Chiefs of Staff, 1964.

Department of Defense. *Report of DOD Study Group on Adequacy of Mobility Planning and Operations of Organization.* Washington, DC: Assistant Secretary of Defense (Administration), Joint Ad Hoc Study Group, 1956.

292-919 O - 79 - 8

Department of Defense. "Statement of Areas of Understanding Between the Department of Defense and the General Services Administration With Respect to Traffic Management." *Federal Register* 15, No. 201, 17 October 1950.

Department of Defense. *The Department of Defense Plan for the Civil Reserve Air Fleet.* Washington, DC: Government Printing Office, 10 March 1952.

Department of the Navy. *Military Sea Transportation Service, Navpers 10829-C,* prepared by Bureau of Naval Personnel. Washington, DC: Government Printing Office, 1968.

Department of the Navy. Naval Historical Division. *History of the Naval Overseas Transportation Service in World War I,* by Lewis P. Clephane. Washington, DC: Government Printing Office, 1969.

General Accounting Office. *Build and Charter Program for Nine Tanker Ships.* GAO Report #B-174839. Washington, DC: Government Printing Office, 15 August 1973.

Library of Congress. Legislative *Reference Section. Subsidy and Subsidy Effect Programs of the US Government,* prepared for the Joint Economic Committee, 89th Cong., 1st sess. Washington, DC: Government Printing Office, 1965.

Maritime Administration. *Deck and Engine Officers in the US Merchant Marine: Supply and Demand 1974-1984.* Washington, DC: Department of Commerce, 1974.

Military Sealift Command. "Military Sealift Command Briefing." Command briefing current as of 20 May 1977. Washington, DC: Military Sealift Command, 1977.

Military Sealift Command. "Military Sealift Command." Unpublished Daily Capability Report, Report No. M-321/0013, 4 November 1977.

Military Sea Transportation Service. "US Military Sea Transportation Service." Presentation for the Joint Logistics Review Board, Washington, DC, 19 June 1969.

Office of Management and Budget. *The Budget of the United States Government: FY 1979*. Washington, DC: Government Printing Office, 1978.

Congressional Documents

House. Committee on Armed Services. *Military Airlift. Hearings before the Subcommittee on Military Airlift*, 91st Cong., 2d sess. Washington, DC: Government Printing Office, 1970.

House. Committee on Armed Services. *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management Command. Hearings before a Special Subcommittee on Transportation*. Washington, DC: Government Printing Office, 1971.

House. Committee on Armed Services. *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management and Terminal Service. Hearings before the Special Subcommittee of Transportation, September-October 1971*. Washington, DC: Government Printing Office, 1971.

House. Committee on Armed Services. *Proposed Transfer of Military Sealift Command Functions to Military Traffic Management and Terminal Service. Report by the Special Subcommittee on Transportation*. Washington, DC: Government Printing Office, 1971.

House. Committee on Armed Services. *Report on the Posture of Military Airlift, 9 April 1976*, 94th Cong., 2d sess. Washington, DC: Government Printing Office, 1976.

House. Committee on Armed Services. "Statement of L. O. Kitchen, President, Lockheed Corp." Presented before the Research and Development Subcommittee, 94th Cong., 1st sess. Cited in *The Posture of Military Airlift. Hearings before a Subcommittee of the House Committee on Armed Services*, 94th Cong., 1st sess. Washington, DC: Government Printing Office, 1975.

House. Committee on Armed Services. *The Posture of Military Airlift. A Report by the Research and Development Subcommittee, April 9, 1976*, 94th Cong., 2d sess. Washington, DC: Government Printing Office, 1976.

House. Committee on Armed Services. *The Posture of Military Airlift. Hearings before the Research and Development Subcommittee*, 94th Cong., 1st sess. Washington, DC: Government Printing Office, 1975.

House. Committee on Government Operations. *Military Air Transportation, 1958. H.R. 2011*, 85th Cong., 2d sess, 26 June 1958.

House. Committee on Government Operations. *Military Air Transportation, 1959. Hearings before the Subcommittee on Military Operations, 11-14 May 1959*, 86th Cong., 1st sess., 1959.

House. Committee on Government Operations. *Military Air Transportation. Hearings before a Subcommittee of the House Committee on Government Operations*, 86th Cong., 2d sess. Washington, DC: Government Printing Office, 1960.

House. Committee on Government Operations. *Military Air Transportation—1963.* Tenth Report by the Committee on Government Operations. Washington, DC: Government Printing Office, 1963.

House. Committee on Merchant Marine and Fisheries. *Merchant Marine Oversight—Part I. Hearings before the Subcommittee on Merchant Marine*, 94th Cong., 1st sess. Washington, DC: Government Printing Office, 1975.

House. Committee on Merchant Marine and Fisheries. *Merchant Marine Oversight—Part II. Hearings before the Subcommittee on Merchant Marine*, 94th Cong., 2d sess., 1976.

House. Committee on Merchant Marine and Fisheries. *Study of Operations of Military Sea Transportation Services. Hearings*, 83d Cong., 2d sess. Washington, DC: Government Printing Office, 1954.

House. Committee on Merchant Marine and Fisheries. *Tanker Construction and Cargo Equity. Hearings*, 95th Cong., 1st sess. Washington, DC: Government Printing Office, 1977.

House. Select Committee on Post-War Military Policy. *Hearings on House Resolution 465, Part I*, 78th Cong., 1st sess. Washington, DC: Government Printing Office, 1944.

Senate. Committee on Appropriations. *Report No. 94-446, to Accompany H.R. 9861*, 94th Cong., 1st sess. Washington, DC: Government Printing Office, 1975.

Senate. Committee on Interstate and Foreign Commerce. *Military Sea Transport Service. Hearings*, 83d Cong., 1st sess. Washington, DC: Government Printing Office, 1953.

NATIONAL SECURITY AFFAIRS MONOGRAPH SERIES

76-1 *Petropolitics and the Atlantic Alliance.* Joseph S. Szyliowicz and Bard E. O'Neill. (AD No. A037807)

77-1 *Military Unionism and the Volunteer Military System.* Peter F. Lane, Ezra S. Krendel, and William J. Taylor. (AD No. A037808)

77-2 *Forward Deployment in the 1970's and 1980's.* Herbert G. Hagerty. (AD No. A037806)

77-3 *Korea: Future Problems, Future Policies.* Jack G. Callaway. (AD No. A046470)

77-4 *Petroleum and Security: The Limitations of Military Power in the Persian Gulf.* Bard E. O'Neill (AD No. A046876)

77-5 *The Issue of Military Unionism: Genesis, Current Status and Resolution.* Colben K. Sime, Jr. (AD No. A051509)

77-6 *US Security Interests in Eastern Europe: The Case of Poland.* Daniel M. Duffield, Jr. (AD No. A050814)

78-1 *Crisis Decision Setting and Response: The Hungarian Revolution.* Ernest A. Nagy. (AD No. A054351)

78-2 *SALT TWO Ratification Issues.* Joel M. McKean. (AD No. A054352)

78-3 *Soviet Naval Strategy for the 1980's.* Steve F. Kime. (AD No. A058279)

78-4 *Strategic Nuclear Parity and NATO Defense Doctrine.* Raymond E. Burrell. (AD No. A059166)

78-5 *Technology and Arms Control.* Donald J. Stukel. (AD No. A060567)

78-6 *Structuring the Marine Corps for the 1980's and 1990's.* John S. Grinalds. (AD No. A061544)

79-1 *Soviet Options for War in Europe: Nuclear or Conventional?* Graham D. Vernon.

79-2 *The French Communist Party, Nuclear Weapons, and National Defense: Issues of the 1978 Election Campaign.* Raymond E. Burrell.

U.S. GOVERNMENT PRINTING OFFICE : 1979 O—292-919

The Research Directorate

The Research Directorate provides a sustained opportunity for uniformed and civilian University Research Fellows to study intensively subjects related to national security. The research results, normally published in monographs, case studies, or books, are made available to cognizant government officials and selected activities in the private sector. The Directorate also administers the National Security Affairs Institute, which offers opportunities for government officials to meet with distinguished scholars and other knowledgeable citizens to explore national security issues.